Scientific American.

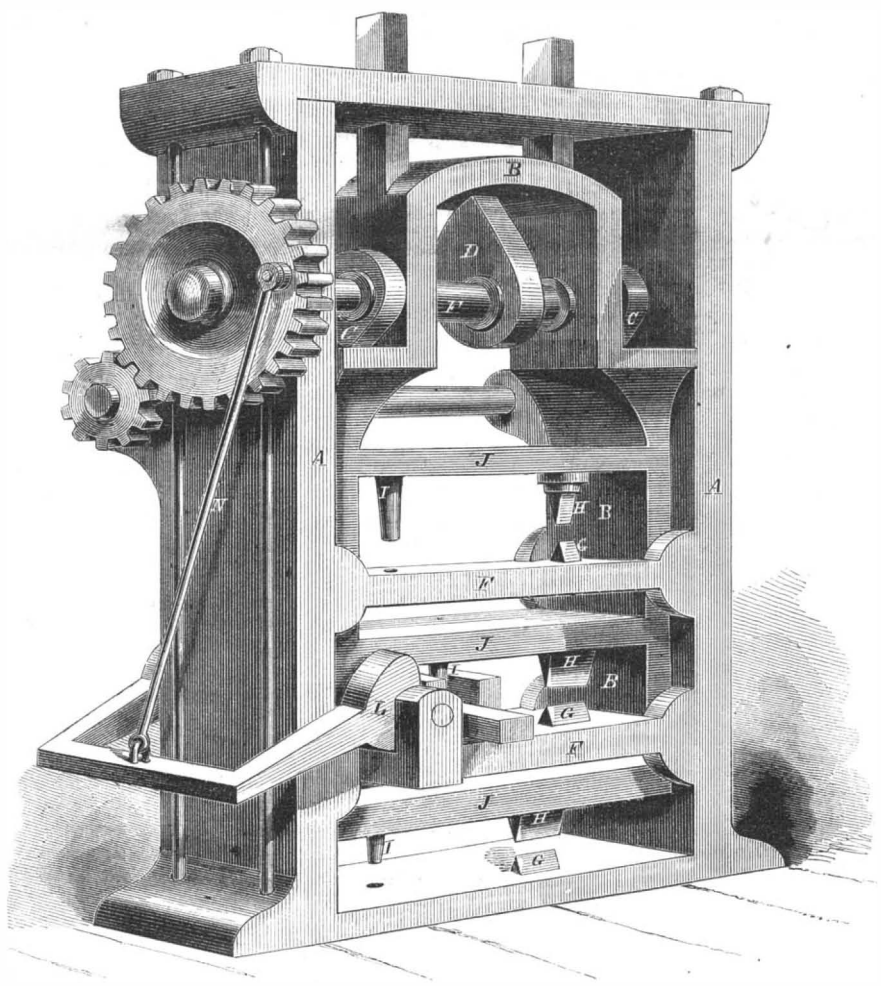
A JOURNAL OF PRACTICAL INFORMATION IN ART, SCIENCE, MECHANICS, AGRICULTURE, CHEMISTRY, AND MANUFACTURES.

VOL. V.---NO. 7. NEW YORK, AUGUST 17, 1861. NEW SERIES

Improved Punching and Shearing Machine.

Perhaps there is no more impressive exhibition of power made by any mechanism than that which is furnished by a large punching machine. A bar of cold wrought iron an inch in thickness is placed on a steel bed over a smooth hole, and a cast-steel punch is forced slowly through the bar, carrying a plug of iron before it into the hole below. It would seem as if a bar of cold iron an inch in thickness would stop the descent of any punch that could be made, but the framing is constructed of such strength, and the power is so multiplied, that the punch is easily pressed through the bar.

The annexed engraving represents one of these powerful machines, which is also designed for shearing metal; the cut being intended to illustrate certain improvements in this class of machines, invented by P. C. Perkins, of Waterford, N. Y.



PERKIN'S PUNCHING AND SHEARING MACHINE.

The outside stationary framing, A A, is made of massive strength, and within this a movable frame, B B B, is carried up and down by the eccentrics, C C and D, upon the shaft, E; the eccentric, D, raising it, and the other two forcing it down. Extending across the frame, A, and firmly secured to it, are cross-bars, FF, having holes through their ends for the passage of the side pieces of the movable frame, B. These cross-bars are intended to support the iron intended to be punched or sheared, and they are accordingly perforated with holes to admit the punches, and are provided with the stationary blades, G G, of the shears. The movable blades, H H, of the shears, and the punches, I I, are attached to the under sides of the cross-bars, J J J, of the movable frame, so that as the latter is forced down, either or all of the punches and shears may be brought into action.

As a bar of iron is liable to be expanded laterally on being punched, unless it is confined between jaws, provision must be made for this requirement. Mr. Perkins' plan is this: Across the cross-bar, F, is firmly secured the iron block, K, to sustain one edge of the bar, which is pressed against it as the punch descends by the eccentrics, L L, an adjustable plate of the proper thickness being interposed between the eccentrics and the bar; the thickness of the plate varying with the width of the bar. The eccentrics are turned upon their fulcra as the punch comes down, by means of the levers, M M, the ends of which are connected with the gear wheel of the shaft, E, by the rod, N.

The advantage of this machine consists in the great variety of work that may be performed with it; as either one or any number of the punches and shears may be used at the same time. The patent for this invention was granted, through the Scientific American Patent Agency, March 12th, 1861, and further information in relation to it may be obtained by addressing the inventor, P. C. Perkins, at Waterford, New York.

Dyeing and Printing Aniline Colors.

A most important patent has recently been taken out in England by R. H. Gratrix, of Salford, and M. P. Javal, of Thann, France, for preparing and applying aniline colors to textile fabrics. The specification of the patent is published in *Newton's London Journal*. It relates that hitherto, in the use of this class of colors for producing patterns upon textile materials and fabrics, the mode adopted for fixing them has been to use albumen, lacterine or other azotized substances; but either from the cost of these materials, or the loose and fugitive character of the applied colors, no cheap and fast goods could be produced.

In order to obtain patterns by the aid of printing in the above-named class of colors, which patterns shall be chemically fixed, the patentees precipitate the color on the fabric in the following manner: They first form a compound of tannin with the color which is desired to be employed, and thicken it with gum senegal or other suitable thickening material; they then take the article to be operated upon, say, for example, the cloth known in the trade as "prepared cloth"—that is, cloth on which tin or other suitable metallic base has been precipitated by any of the well-known preparation processes—and impress upon this cloth the prepared or combined color, by means of printing blocks or engraved rollers. Or, as a modification of this improved process, they print upon the prepared cloth the desired pattern with a composition consisting of a thickened solution of gall nuts. By this means there is formed on those parts only of the surface which are to carry the colored pattern, a combination of tannin with oxyd of tin or other suitable base. This fabric is submitted to a bath composed by preference of a dilute acid solution of any desired color, derived from aniline or analagous substances. By either of these processes a precipitate of the color employed is obtained on the fabric, and thus, in a comparatively inexpensive manner, the colored pattern is firmly fixed on the fabric.

In order to form compounds of tannin with the color to be employed, add to a solution of blue, purple or red color, or their ombinations, derived from aniline and analagous substances, so much of a strong solution of galls (a newly-made solution being preferred) as is sufficient to precipitate all the coloring matter, or use the pure tannin, if the expense be not objectionable; then collect the precipitate upon a filter, and wash it, and dry it or not, as may be thought desirable. Re-dissolve this precipitate in acetic acid, alcohol, methylated spirits, or other suitable solvent, and thicken it with gum senegal or other suitable thickening, and it is then ready to be used for printing upon cloth prepared with salts of tin or other suitable mordant or mordants. When the fabric has been printed, it is to be steamed and then washed, with or without the use of soap, according to the color under operation; the red color more particularly requiring such treatment with soap.

THE locomotives on the New York Central Railroad are now no longer known by names, as they were formerly, when designated after places or individuals. Since this system has gone into disuse the locomotives are numbered. All new ones are given a number at the outset, and the old ones, as fast as repaired and painted, drop their names and assume a number.

Mr. D. K. CLARK, the author of the ablest and most comprehensive work on railway machinery yet published, has been appointed superintendent of fixed machinery in the building of the World's Fair, to be held in London in 1862.

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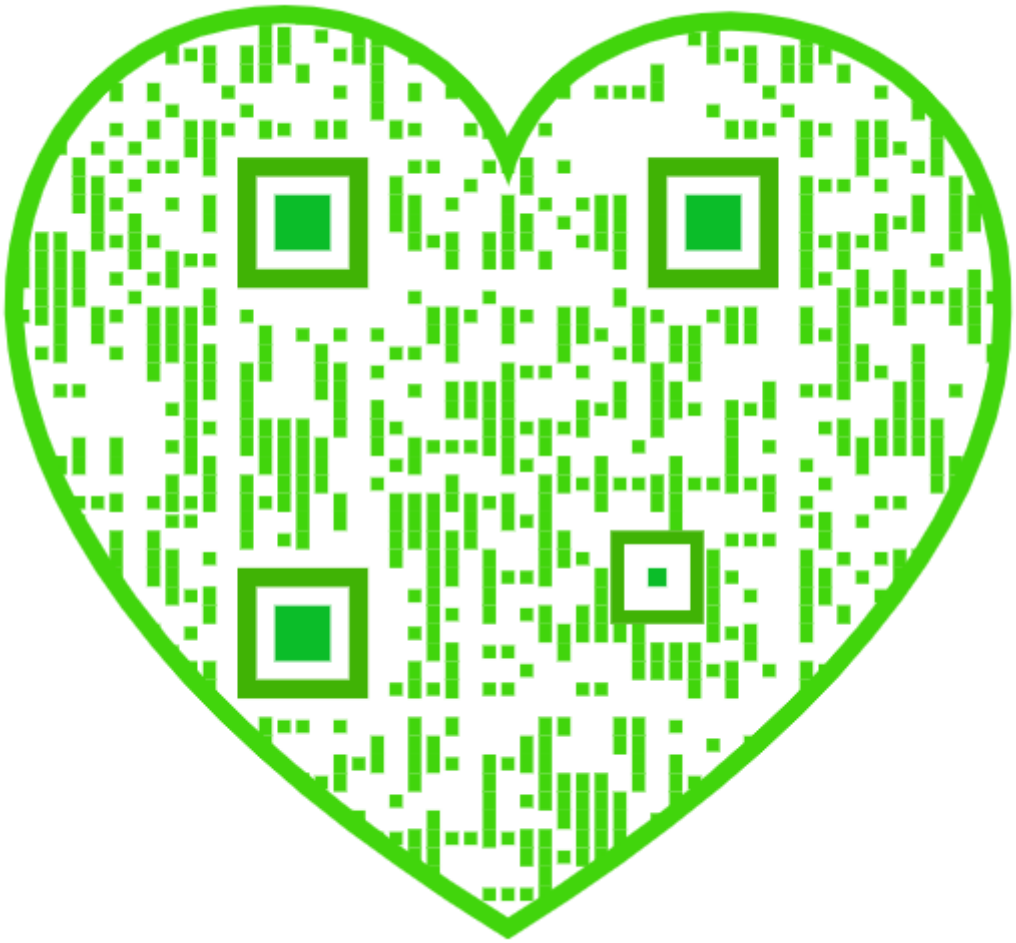

THE WAR.

The battle of Bull Run has so absorbed the attention of the community that the progress of the war in other places has been mostly overlooked. The most important events, however, have latterly taken place in Missouri.

MISSOURI FOR THE UNION.

On the 21st of January last, the Legislature of Missouri passed an act to provide for the election by the people of a convention to decide whether the State should join the secessionists or remain in the Union. The delegates were elected on the 18th of February, and met on the 28th of the same month. After passing a resolution by an overwhelming majority that Missouri should remain in the Union, they adjourned, giving a committee authority to call another meeting if circumstances should make it necessary.

The Governor, however, and a majority of the Legislature being in favor of secession, undertook to carry the State out of the Union in spite of the people. An act was passed giving the Governor unlimited powers, and placing all the money in the State Treasury, including that appropriated to the support of schools and asylums for the insane, into his hands. The Governor raised an army, and commenced war against the United States. We have already given an account of his being driven out of the capital by Gen. Lyon, routed at Booneville, and chased into the southwest corner of the State. We have since learned that his flight continued into Arkansas, and that Gen. Lyon is guarding the southern boundary of the State against his return.

In this state of affairs the committee called a meeting of the convention, which had received ample authority to act in the premises; and on the 30th of July the convention, by a vote of 56 to 25, declared the offices of Governor, Lieutenant Governor and Secretary of State vacant. The offices of members of the Legislature were also declared vacant by a smaller majority—52 to 28. Provision was made for a new election in November, the constitution requiring three months' notice for such election. Officers were appointed to act in the interim. Hamilton R. Gamble was elected to the office of Governor by 61 votes, Willard P. Hall, Lieutenant Governor, by 61 votes, and Mordecai Oliver, Secretary of State, by 61 votes. The opposition were excused from voting, as they protested against the power of the convention. No votes were cast against any of the candidates.

OPERATIONS IN WESTERN VIRGINIA.

We have given a full account of the overthrow of Gen. Garnett by the Union forces under Gen. McClellan, and we now have news of the flight of Governor Wise, who was endeavoring to put down the Union men in the valley of the Kanawha, further west than Gen. Garnett's position.

The Kanawha is a navigable stream rising in the Allegheny Mountains in North Carolina, and running north-northwest 400 miles through the western part of Virginia and emptying into the Ohio. Charleston is the principal port on the Kanawha, and at this town ex-Gov. Wise, of Virginia, who is a frothy politician, had collected a secession army to overawe the Union sentiment which is predominant in Western Virginia. A Union force of three Ohio and two Kentucky regiments, under command of Gen. Cox, was sent from Ohio up the valley of the Kanawha to drive off Gov. Wise and his army. Gen. Cox proceeded with part of his troops in steamboats and the others marching along the roads nearest the river. On the 25th of July they arrived at Charleston, having had one slight skirmish at Scarey Hill on the way up. As they approached Charleston, Gov. Wise fled with his forces, and at last accounts Gen. Cox was following him, repairing the bridges which Gov. Wise had burned to obstruct the pursuit.

TAX ON CARRIAGES AND WATCHES.—Some of our cotemporaries are publishing that Congress has recently passed an act levying a tax on carriages and watches. This is erroneous; no such law has been enacted.

ALMOST every steamer which arrives from Europe brings a considerable quantity of arms. The *Borussia* lately brought 75 cases of Enfield rifles on General Fremont's order, and *The City of Baltimore* lately brought 206 cases for dealers in the city.

THE NEW TAX LAW.

We present herewith an abstract of the new tax law recently passed by Congress, the object of which is to provide $20,000,000 to pay the interest on the accruing public debt. A large proportion of the bill is devoted to details respecting the duties of assessors, the mode of collection, and the penalties for a non-compliance with the provisions of the act. The sections relative to the income tax are of general interest:—

APPORTIONMENT.

Maine	$420,826	Indiana	$904,875
New Hampshire	218,406	Illinois	1,146,551
Vermont	211,068	Missouri	761,127
Massachusetts	824,581	Kansas	71,743
Rhode Island	116,963	Arkansas	261,886
Connecticut	308,214	Michigan	501,763
New York	2,603,918	Florida	77,522
New Jersey	450,134	Texas	355,106
Pennsylvania	1,946,719	Iowa	452,088
Delaware	74,681	Wisconsin	519,688
Maryland	436,823	California	254,538
Virginia	937,550	Minnesota	108,524
North Carolina	576,194	Oregon	35,140
South Carolina	303,570	New Mexico	62,648
Georgia	584,367	Utah	26,982
Alabama	529,313	Washington	7,755
Mississippi	413,084	Nebraska	19,321
Louisiana	385,886	Nevada	4,592
Ohio	1,567,089	Colorado	22,905
Kentucky	713,695	Dakota	3,241
Tennessee	669,498	District Columbia	49,437

The direct tax laid by the act is to be assessed and laid on the value of all lands and lots of ground, with their improvements and dwelling houses, which several articles subject to taxation shall be enumerated and valued by the respective assessors at the rate each of them is worth in money on the first day of April, eighteen hundred and sixty-two: Provided, however, that all property of whatever kind coming within any of the foregoing descriptions, and belonging to the United States or any State, or permanently or specially exempted from taxation by the laws of the State wherein the same may be situated at the time of the passage of this act, together with such property belonging to any individual, who actually resides thereon, as shall be worth the sum of five hundred dollars, shall be exempted from the aforesaid enumeration and valuation, and from the direct tax aforesaid. And provided further, that, in making such assessment, due regard shall be had to any valuation that may have been made under the authority of the State or Territory at any period nearest the first day of April.

Persons will be required to give written lists of lots and dwellings liable to direct tax, in default of which, or in case of fradulent return, the assessor will make such lists; and in case of fraud the person offending may also be convicted before any court having competent jurisdiction and fined $500.

ABSENTEE PROPERTY OWNERS.

In case of the absence of property owners the assessor must leave a note requiring the owner to present the list within ten days. If he refuses, the assessor may enter the premises and make the list. Owners may make out the lists of property situated in districts in which they do not reside, and the said lists shall be valid and sufficient for the purposes of this act, and on the delivery of every such list the person making and delivering the same shall pay to the assessor one dollar, which he shall retain to his own use.

PUBLICATION OF TAX LISTS AND RECTIFICATIONS.

After valuations are assessed lists must be published by the assessor in each district, and for twenty-five days after publication appeals will be received and determined relative to excessive valuations or enumerations. No valuation shall be increased without a previous notice of at least five days.

The Board of Assessors must carefully examine the lists of valuation, and they may revise, adjust and equalize the valuation of property in any county or State district, by adding thereto, or deducting therefrom, such a rate per centum as shall, under the valuation of the several counties and State districts, be just and equitable. Provided, the relative valuation of property in the same county shall not be changed, unless manifest error or imperfection shall appear in any of the lists of valuation, in which case they have power to correct the same, as to them shall appear just and right. And if, in consequence of any revisal, change and alteration of the said valuation, any inequality shall be produced in the apportionment of the direct tax to the several States, it shall be the duty of the Secretary of the Treasury to report the same to Congress, to the intent that provision may be made by law for rectifying such inequality.

When the assessors have completed the adjustment and equalization, the proper quota of the direct tax to each county and district of a State shall be apportioned.

UNPAID TAXES.

When any tax shall remain unpaid for the term of one year, the collector in the State where the property lies, having first advertised the same for sixty days in at least one newspaper in the State, shall proceed to sell, at public sale, so much of the said property as may be necessary to satisfy the taxes due thereon; together with an addition of twenty per centum thereon; or if such property is not divisible, as aforesaid, the whole thereof shall be sold, and accounted for in the manner hereinbefore provided. If the property advertised for sale cannot be sold for the amount of the tax due thereon, with the said addition thereon, the collector shall purchase the same in behalf of the United States for such amount and addition.

INTERNAL DUTIES—THE EXCISE TAX.

After the first of April, 1862, a duty of five cents per gallon must be paid on distilled liquors—distillers must keep a record of the number of gallons they distill; the duty must be paid at the time of rendering the account; liquors distilled, upon which the duty has not been paid, may be seized and sold; and a refusal to allow the proper officer to inspect the accounts shall subject the refuser to a penalty of $500. Fermented liquors pay a tax of two cents per gallon, and brewers must keep an account of the quantity brewed. Penalties are attached for a non-compliance with the law.

THE INCOME TAX.

Persons earning or having profits, gains and incomes in their own right or in trust, and all companies, institutions, associations, corporate or not corporate, and corporators, earning or having profits, gains and incomes, which profits, gains and incomes are or shall be derived from sources other than the property by this act subjected to a direct tax, for the year preceding the first day of April, Anno Domini eighteen hundred and sixty-two, and each year thereafter, beyond the sum of eight hundred dollars, derived from any source of business, trade or vocation, dividends of stocks, interest of money or deposits, salaries, interest on legacies, annuities, or derived from any other source, within or beyond the boundaries of the United States, shall be subject to and pay a tax of three per centum on the first day of April in each year from and after the passage of this act; and in computing such profits, gains and incomes, there shall be deducted, besides the sum of eight hundred dollars, as aforesaid all local or State taxes, the wages paid for labor, and other charges incident to such profits, gains and incomes, not including personal and family expenses, in such manner as to leave the annual net income of each and every person, excepting the deductions heretofore and hereafter mentioned, subject to taxation under the provisions of this act: provided, that no person, member or corporator of any company, institution, association or corporation, charged or chargeable with a tax under this act, shall be required or be subjected individually to taxation for his or her share of the profits, gains or incomes of such company, institution, association or corporation which shall have been taxed under the provisons of this act, and paid in whole by said company, institution, association or corporation; but where the income tax is derived from persons residing abroad, but drawing money from their property in this country, the rate shall be five per cent per annum.

Each and every person, company, institution, association, corporate or not corporate, and corporator, as mentioned in the preceding section, shall, on the first day of April next, and each year thereafter, cause a statement to be prepared and verified by the oath of such person, or by the oath of the principal manager of such company, institution, association, corporate or not corporate, which statement shall exhibit the amount of profits, gains and incomes of said person, company, institution, association, corporate or not corporate, for the year ending on the said first day of April, which statement shall, within thirty days from the first day of April, be lodged with the collector of excise or internal taxes for the district in which the principal place of business of such person or persons,

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company association, institution, corporate or not corporate, is situated ; and it shall be the duty of such collector to give public notice that he will attend at convenient places to receive such statement and the amount of tax or duty payable thereon and shall give a receipt or receipts for the amount paid ; and if any person or persons earning or having profits, gains or incomes, in his own right or in trust, above the sum of eight hundred dollars, as hereinbefore mentioned, shall neglect or refuse to cause such statement to be made, lodged with the collector and verified, as aforesaid, the amount of tax or duty may and shall be fixed by the collector, and after ten days' notice of the amount so fixed, if not paid, such amount may be levied by distraint in the manner prescribed in other cases of delinquency by this act.

A deduction of fifteen per cent, when the state assumes, assesses and collects the direct income and excise taxes for the federal government, is allowed.

Sickness in the Secession Army---Is it Typhoid Fever ?

It is stated by persons who have left the camp in the vicinity of Fort Pickens that the secession soldiers are dying very fast of typhoid fever ; but we have strong doubts of this being really the disease. We have lived long enough at the South to know that the physicians there seem to be in the habit of calling all fevers of a low grade typhoid fever. In different places and at several times, we have known a prevalent fever to be thus designated by Southern physicians, and on post mortem examinations the peculiar ulcers in the bowels, which are the characteristic lesion of typhoid fever, were not to be found ; this fact, with the symptoms, showing the disease to be simply bilious or malarious fever. Considering the locality and the season, we have very little doubt that it is malarious fever that is decimating the secession forces near Fort Pickens. We also suspect that it is this disease with which Colonel Farnham has been ill at Washington ; his temporary delirium resulting from congestion of the brain.

Curious Course of a Bullet.

One of the Fire Zouaves was shot in the battle of Bull Run in a manner very surprising to himself and every person who has heard the story. While fighting away like a tiger with his mouth open on account of excessive heat and thirst, a musket bullet from the enemy entered his mouth, then passed up at the back of his upper jaw and out of his face just behind his left eye. This bullet made its entrance and exit so silently and scientifically that the Zouave actually knew nothing about it until some time afterwards, when he was told that something had happened to his face, his informant discovering the blood trickling down his cheek. He then asked his comrade to examine his face, who discovered what had occurred. The Zouave states that he felt a peculiar prick under his eye, but had no idea it was caused by a musket shot, and he thinks that he fired two rounds after receiving the wound before he noticed the sensation which he described.

A rag was soon applied to stanch the wound, and on went the Zouave, fighting as before until the end of the battle. The soldier who received this shot is now in New York city upon furlough and will soon be ready for service again.

Select Riflemen.

Efforts are being made to organize a brigade of the best rifle shots in America, under the command of Mr. H. Berdan, the well-known inventor, who is said to be the best rifle marksman in the whole country. The great randezvous of this select corps is at Weehawken, on the Jersey shore, near this city. Every man who applies for admission into a regiment, must there prove his title to become a member by firing at a target 200 yards distant, and placing ten shots within a circle averaging five inches—thus making a string of 50 inches at least, firing from a rest. A German and a Swiss rifle company formed in New York have already been accepted, and 1,800 men have been enrolled throughout fifteen States. Each State has promised to furnish one company at least, and it is intended to raise a brigade of three regiments. It is designed that this brigade shall form the picked skirmishing corps of our army, and maintain the advanced positions.

THE WHITWORTH, ENFIELD AND AMERICAN RIFLES.

On a recent occasion a member of the British House of Commons moved for a select committee to inquire whether a more efficient weapon than the Enfield rifle may not be provided for the army, without additional cost and serious inconvenience to the service. In moving for the appointment of this committee, its author—Mr. Vivian—stated that the Whitworth rifle was the best weapon which could be adopted, and if made at the Enfield manufactory, the cost of each would be but a trifle (about a dollar) more than the present rifles. Several members asserted that the Enfield was the best army rifle in the world, but that for long distances, the Whitworth was as superior to it as it was to old "brown Bess." Lord Elcho—a skillful marksman and soldier—stated that the mean deviation of the best Enfield was 12 inches in a range of 500 yards, while the mean deviation of the best Whitworth was only 3½ inches in the same range In the discussion which ensued on this motion, a brief history of the rifled musket in the British army was given. In 1852, the old Duke of Wellington recommended the general introduction of rifles into the service, and in 1855 most of the army had been furnished with them. These were used with destructive effect upon the Russians in the Crimea, who in 1855 were still armed with the old smooth-bored musket.

From the discussion we learn that the superiority of the Whitworth rifle for accuracy, is claimed to be in giving the bullets a quicker revolution (spinning motion), the use of a smaller bore, and a regular twist. The Enfield rifle has an irregular twist, and the bullet makes a turn in 6 feet 6 inches, whereas the Whitworth rifle barrel has one turn in twenty inches, the twist of the grooves is regular, and the bore is .45 inches, while that of the Enfield is .577. The same weight of bullet is used for both with an equal charge of powder, but the small bore is supplied with a bullet half an inch longer, and thus while it is equally as heavy as the other, it does not experience such resistance from the atmosphere. This is one reason why its range is much greater, being equally as accurate at 1,000 yards as an Enfield at 600. As it regards breech and muzzle loading rifles, Mr. Newdegate, M. P., advocated the former, and asserted it was superior for military purposes. He was informed that a breech-loading carbine was about to be adopted for the British cavalry, and Lord Palmerston said government was now making experiments and investigations respecting the introduction of new and superior rifles. About 800,000 Enfield rifles are now in the hands of the English forces and in the arsenals. One great objection to the adoption of the Whitworth rifle having a smaller bore, was the making of two sizes of cartridges for the army. The life of a rifle is about twelve years, and if the present Enfields were worn out, there would be no hesitancy about adopting another and a superior kind. If the experiments which are now being made in England prove that the Whitworth rifle is superior to the Enfield, it will be adopted as soon as possible, as it is the intention of the British government, as stated by the premier, to arm the soldiers with the very best weapons which can be obtained. This information is of great consequence to us as a people. While we have the best private rifle makers in the world, and, as we have been assured by some of them, that these rifles are far more accurate than those of Whitworth, our government has been far too slow in making investigations, and in adopting the most efficient weapons. We must keep a careful watch upon the movements of all other armies, as it regards the best war weapons, or we may find ourselves in a year or two hence as much behind other armies with our present musket rifles, as the smooth-bore is behind the best army rifle. If American gunsmiths make superior rifles to those in Europe, our army should be provided with them ; but if the Whitworth rifle surpasses all that are made in America, let us adopt it. This is a question which not only concerns our rifle makers, but the whole people. Let us have the best weapons for our soldiers no matter who may be their inventor. Since rifled muskets can be made which are as efficient at ranges of 1,000 yards as our common musket rifles at 500, the soldiers who may be armed with the former will certainly have a most decided advantage over those who are equipped with the latter.

Chemistry and Medicine.

The following instructive extract from the London *Chemical News* is a portion of a lecture lately delivered by Professor A. W. Hofmann, F. R. S.:—

Valuable as have been the fruits of chemical inquiry, still more may be expected from the further prosecution of this study. The notion that the action of most of our medicines is chemical, is daily growing into a general conviction. We admit that with every change wrought by pharmaceutical agents in the state of our organism, there occurs a corresponding change in its composition, resulting from their reaction on one or more of its constituents. But of these transformations, which doubtless could be expressed in numbers as definitely as can our laboratory processes, how few are we in a condition to explain ; in how few instances has the physician even a vague conception of the mode in which any medicine performs its office ! Nobody doubts the power, which the principles of the Cinchona bark, or of tea and coffee, exert upon the living body, but we are perfectly in the dark as to the way in which they act upon the animal economy. But if we meet with a series of similar substances in several animal fluids: *e.g.*, *urea* and *creatine*, almost constantly present in urine, *glycocoll* generally, and *cystine*, occasionally, excreted in the same liquid, and if we find that all these substances exhibit in their chemical relations a close analogy with quinine and theine, we begin to feel a sort of anticipation of the manner in which these agents may act upon the system. Such examples illustrate at once the nature of the aid which the therapeutics may confidently expect from the progress of organic chemistry. Medicine some years ago found itself in a predicament very similar to that of agriculture at the same period ; its resources appeared to be in a state of exhaustion, the rich capital of facts accumulated in the department of organic morphology by the industry of the anatomist, and by the acumen of the physiologist, could not yield its full fruits until an equivalent of knowledge had been drawn from the study of bio-chemical phenomena. This state of things, however, is rapidly changing ; associated with chemistry, medicine no longer draws the veil of vitality over processes, the mystery of which may be unlocked by the key of analysis ; it no longer shrinks from climbing, step by step, the ladder of recognition, because its upper extremity, disappearing among the clouds, seems to rise forever beyond the grasp of inquiry. The special zeal with which the field of organic chemistry has been cultivated during the last thirty years, the simple and accurate methods which we now possess for determining the composition of organic products, the amount of analysis actually performed, and, more than all, the still untiring energy of the numerous laborers in the same field of investigation, hold out the promise that the connexion between medicine and chemistry, becoming daily more intimate, will be productive of benefits, the importance of which we can scarcely venture to estimate in the present state of our knowledge.

Rifles Rising in Price.—The London *Engineer* states that there is scarcely a gun-maker in Birmingham but has orders on hand sufficient to keep all his hands employed for two months. So excessive is the demand for small firearms that the Enfield pattern of rifled musket has advanced in price five dollars and a half. Most of these orders are for America. It is rather a reflection upon the enterprise of our American manufacturers and gunsmiths that none of them have gone into the manufacture of the plain Enfield rifle upon an extensive scale for army purposes.

Inventors and the War---Demand for Good Army Inventions.

Although the demand for inventions pertaining to agricultural, domestic and ordinary mechanical pursuits is not so great as usual, the demand for all kinds of improvements adapted for army purposes is very great. Many of the projectiles, tents, rifles, saddles, canteens, &c., recently patented, have been introduced into the army, and large contracts are now pending for camp and cooking implements of various kinds.

The most improved kinds will be adopted, and this is a class of inventions to which we would specially direct the attention of inventors as a field of profit at the present time.

Field Telegraph.—The light cavalry in Paris are being drilled in the rapid establishment of telegraphic wires during an engagement. The wires are secured on lance staffs stuck in the ground, and they are stretched from the commander-in-chief to the positions of the generals of divisions. This is certainly a new branch of military tactics. At the battle of Solferino, a field telegraph was used by the Emperor, but it was laid by telegraphic experts, not soldiers.

By the latest news from Europe we learn that the giant iron-plated frigate *Black Prince*, built by Messrs. Robert Napier & Sons, of Glasgow, has made its trial trip on the river Clyde with the most gratifying success. This vessel is to be the mate of the *Warrior*, now building in London, which was commenced first, but is still far behind in its construction.

The French iron-plated frigate has made a voyage to Algeria and back to France. It is stated that her speed was 11 knots per hour.

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TAPEWORMS AND MEASLY PORK.

Strange, passing strange, and wonderful will be found the facts in this article.

In Boston there is a very learned German, D. F. Weinland, Ph.D. (Doctor of Philosophy), who is devoting his life to the study of tapeworms. During the last ten years he has dissected more than 5,000 animals in search of these singular parasites, and the facts which he and his collaborators in this field of investigation have ascertained are exceedingly curious.

Tapeworms are found in all classes of vertebrated animals, fishes as well as land animals, different species of animals generally having different species of tapeworms; that of the horse differing from that of the ass; that of the sheep from that of the goat; and that of the rat from that of the mouse.

The common human tapeworm lives and grows in the bowels. Its head is provided with four suckers with a cluster of little hooks, by means of which it attaches itself to the intestine, the body floating two or three yards down, and absorbing the nourishing juices either through small openings or through the skin. The body consists of several hundred rings or sections which grow out of the head, so that those nearest the head are the youngest, and the oldest are at the end of the tail. The creature is an hermaphrodite; and as the joints mature, the sexual organs are developed, the male and female both in the same joint. The joints then break off, and *each one is a complete living animal*, preserving its existence frequently for a considerable time, and laying numbers of eggs after it is broken off.

The eggs pass out by the fœces, and *never hatch unless they enter the stomach of a hog.* But if the joints are eaten by a hog, or if the eggs find their way into water that is drunk by swine, the eggs hatch in the hog's stomach, producing animals so small as to be invisible to the naked eye, but which, under the microscope, are seen to have three pairs of spines, by means of which they bore their way through the walls of the blood vessels and enter into the circulation. Here they are carried into the muscles of the hog, where they grow into a curious animal, having the head and neck of a human tapeworm, with a round bladder tail, and producing the disease called measles. It has long been known that measly pork was caused by this little bladder-tailed animal, but it is only within a few years that the curious fact has been ascertained that this animal is the larva of the common human tapeworm. It is now proved by carefu' observation, that if one of these animals is taken into the human stomach the bladder-like tail is digested, while the living head and neck pass down into the intestine, where they hook on, and the rings begin rapidly to grow out into the well-known tapeworm.

Other species of tapeworms, living in other animals, have a natural history similar to that of the human tapeworm. They all live in the intestines of vertebrated animals (animals with backbones), and each species must be hatched in the stomach of some animal different from that in which it is developed. For instance, one of the tapeworms of the dog is hatched in the stomach of a hare, and another in that of an ox; and the tapeworm of a cat is hatched in the stomachs of rats and mice.

About 200 species of tapeworms have been described, five of them being found in man. There are only two, however, that are at all common. One of these is a narrow worm with hooks on its head, found particularly in the Teutonic nations (Germans, English and Americans), and the broad tapeworm without hooks, which seems to live almost solely in the Swiss and in the Sclavonic nations. The former and more common of these two species has a head about the size of a pin's head, and the body gradually widens to about a quarter of an inch, sometimes reaching a length of 24 feet. Tapeworms have been found in sheep 100 feet long.

It is doubted by some physicians whether tapeworms are injurious to health, though it seems probable that they are. They are certainly generally accompanied either by cerebro-spinal affections, or nausea, or indigestion, or colic. The great remedy is pomegranate bark.

There are four orders of "intestinal worms" or "helminthes," and the several species of tapeworms constitute one of these orders. The name given by naturalists to this order is *Cestoidea*, from cestos, *girdle* of Venus.

We have obtained the curious facts given above from a pamphlet published by Dr. Weinland, some time since, at Cambridge.

A BLISTER IN THE PALM A REMEDY FOR DISEASE.

We proclaim another mode of treating disease—a treatment that casts homeopathy, hydropathy, steam doctoring, the movement cure, and the science of therapeutics itself entirely into the shade. It is well known that all these systems, though they make a loud noise in the world, really accomplish very little; nearly all patients who recover under the treatment of physicians of any school, would have recovered without the aid of the physician, and it is very seldom indeed that fatal diseases are diverted from their course by putting drugs into the stomach. But our system is effectual; it will cure many of the worst diseases to which mankind are subject, and it will prevent them all. It is as simple as it is powerful; it is nothing more than raising a blister in the palm of the hand. The blister must not be raised by cantharides or other poisonous irritants, but must be produced by friction, accompanied with an alternate contraction and extension of the muscles. If the operation acts as a sudorific, inducing a sensible perspiration between the clavicles and above the eyebrows, it is all the more efficacious. Almost any solid substance may be employed for administering the friction, though it has been discovered that the best substance for the purpose is the handle of some tool, such as a hammer, saw or plane; the very best of all being the handle of a plow or hoe.

This treatment produces the good effects of all the articles in the whole materia medica, and with more power and certainty than they. For instance, it is a more powerful opiate than opium, and, while the sleep induced by narcotics is succeeded by nausea and debility, that resulting from this treatment is wholly refreshing and invigorating, and is followed by a peculiarly heathful and buoyant exhilaration.

As a tonic it is more beneficial than bark or iron, not only strengthening the muscles, but actually enlarging their volume.

To give an appetite, it is better than any dinner pill. If the epicure who sits down to his table with indifference, and forces a few mouthfuls of his dainty viands into his stomach, where they give him great distress, will adopt this treatment, he will come to the table with a keen desire that will give a relish to the plainest food; and digestion waits upon an appetite thus produced.

It is a better remedy for incipient consumption than cod liver oil, and is a sovereign cure for dyspepsia, jaundice, liver complaint, and a long train of chronic diseases.

It will not only remove bodily ills, but is the best of all medicines for a mind diseased. If a man who is suffering from hypochondriasis, who feels that the burdens of life are greater than he can bear, and who sees the clouds of despair settling over his future, will take hold of a shovel handle and raise a blister in the palm of his hand, he will be surprised to see how the troubles that have oppressed him are brushed away, and the future before him is brightened. New beauties will come upon the face of nature, and new joys and hopes will spring up in his heart. This is the true elixir of life.

While other modes of treatment are expensive, this not only costs absolutely nothing, but it is a source of revenue to the patient. It removes not only sickness and despondency, but poverty also. It is a remedy for all the ills that flesh is heir to.

Though this system is the best of any for the cure of complaints, its great superiority is as a prophylatic. If properly administered to a healthy subject, it will prevent all disease. The next neighbor to the writer of this died at 94 of old age. A few days before his death, in conversation with him, we asked him if he had ever consulted a physician. He replied that he never had.

"Were you ever sick?"

"No."

"Not a day?"

"No."

"Not an hour?"

"No."

"You were never sick in your life?"

"No."

This man knew nothing of physiology; he had never practiced any system of dieting; but every day, Sundays and all, for more than eighty years, and generally excepting Sundays, through the whole day from before sunrise till after sunset, he had applied friction to the palms of his hands.

American Inventions for England.

In alluding to the machinery which has been successfully erected and applied in London by Mr. N. Thompson, of New York, for building boats, the London *American*, in a pardonable burst of enthusiasm, relates what American inventions have done to benefit England. The Hoe printing press, the machinery for making Enfield rifles, sewing machines, Colt's revolvers, Silver's marine governor, reaping machines, and now Thompson's boat machinery, are American inventions. Our cotemporary truly states that England needs a vast number of inventions which have been long in practical use in America. It says:—

Lynn will undertake to supply England with boots and shoes at about half English prices, all made by machinery. Clocks turned out at the rate of thousands a day, and for sale at half a crown or less, and no mean piece of household furniture at that, are all done by machinery. Chairs, and all kinds of cabinet furniture, which are wrought out here by the daily toil of the hand, are turned out in the States with a whiz of the sawing, boring, planing and shaping machinery; a large variety of iron wares, such as locks, &c., which were formerly bought of England at hand labor prices, are now made by machinery infinitely superior for the purposes intended, and at much lower prices. Pianos, by far the most elegant and best in the world, are made wholly, from the elaborate carving outside to the completion of the musical arrangements within, by machinery, and for comparative qualities at about one-half of the prices in England, where nearly all portions, even in the largest establishments, are made by hand, with old-fashioned legs and cup castors, too, that look in modern times as if trousers were needed to cover their naked feet; in short, machinery for an endless variety of manufacturing purposes abounds in the United States to an extent not suspected in England.

We have repeatedly heard intelligent English travelers say that Englishmen were a plain, unartistic people; now, although England is the greatest commercial nation on earth, that saying is a fact, but, being commercial, they naturally look after their interests; hence, in spite of all their various newspaper enterprises in sneering at and reflecting disrespectfully upon anything American, improvements of various kinds will rapidly introduce themselves into this country, and its commercial greatness will advance as rapidly as they are put into practical use. The great matter is to make every consumable thing so cheap that everybody can buy, that both the laborer and the tradesman will find employment. England, who has but little land to cultivate, had much better supply herself and all the world with useful "notions," hundreds of which the Old World is not familiar with, than to let Boston do it.

The observing American when in England, though reveling in the heart of civilization, soothed and made happy at every step he makes by the social kindness he meets, is still obliged to consider himself in an old-fashioned country, and cannot avoid thinking that there are many mechanical appliances needed here that he is accustomed to at home, for common comfort and convenience in life.

* * * Should he choose to make an excursion on the Thames, he is more surprised than ever; he steps upon a boat which, at best, is unfitted in form for river passenger traffic, and as nude of all the modern conveniences for personal comfort as Adam was of clothes before he discovered his nakedness, but when he observes the weather-beaten captain who stands posted upon the bridge of the boat, waving his hand to a boy below, and hears the latter cry out to the engineer: "g-o-a-'e-a-d," "h-e-a-s-y," or "s-t-o-p 'e-r," &c., as the case may require, and the other hand of the captain engaged in telegraphing to the man at the wheel which way he shall steer, the whole process of managing the boat seems so ludicrous that he can scarcely believe that he is not in some country much further east than England. There are needed hundreds of American inventions in England.

A RUNAWAY CAR.—The Bath (Maine) *Times* describes the performance of a car containing twelve tuns of rails on the Androscoggin Extension, which became detached from the train which was being pushed along a descending grade, so that when the train stopped the car went on, increasing in speed. No apprehension was felt as it had a long grade to ascend, which it was supposed would bring it up. The momentum, however, was so great that this impediment was overcome, and the car then commenced a down grade of sixty feet to the mile. The men jumped off and down went the car, increasing in velocity until it was estimated at from fifty to sixty miles to the hour. At this fearful speed, while crossing a long "fill," it came in contact with the car used by the track layers, on which were about a dozen rails. The concussion was frightful. The fugitive car was thrown down the embankment nearly fifty feet, turned bottom up, and the track frames converted into oven-wood in less time than it takes to tell the story. Some of the rails were thrown a hundred feet.

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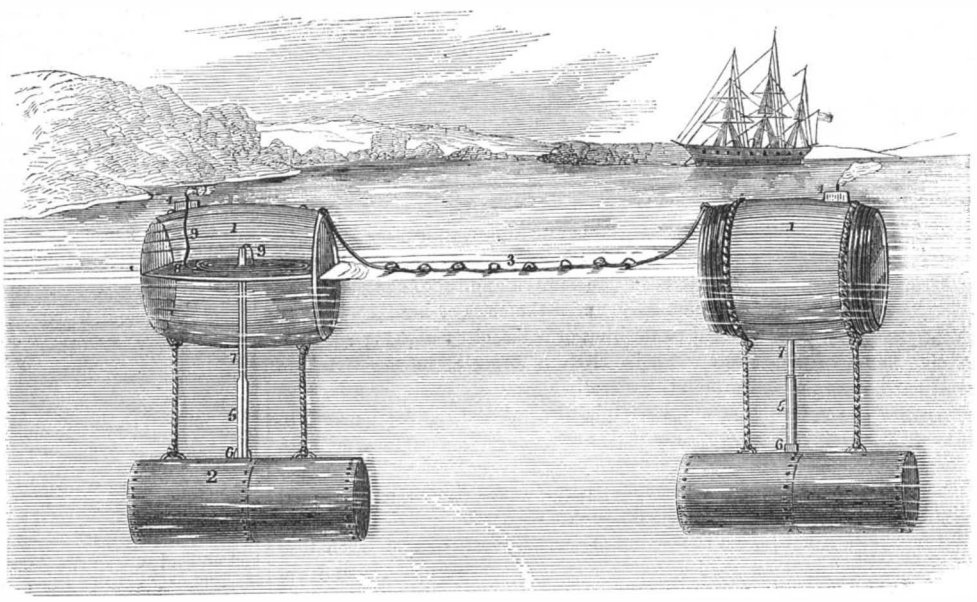
New Mode of Lighting Theaters.

A new mode of lighting theatres has been introduced into the Imperial de l'Opera, Paris, which appears to be a most excellent improvement. The gas burners of the stage are placed under the floor, and the products of combustion are carried off by glass chimneys and ventilating tubes extending to the roof. The luminous rays are collected by a double reflector, and transmitted toward the stage by an inclined opening. A piece of unpolished glass placed before this opening modifies the glaring effect of the light reflected from the polished surface of the reflector. The combustible dresses of the actresses cannot come in contact with any of the gas jets thus arranged, and thus one cause of accidents is removed. The heat and poisonous products of combustion are carried off by such an arrangement of the gas jets, which renders such public places more healthy and pleasant. This system of lighting has been introduced by M. Lissajous, professor of chemistry, and it has been highly extolled by the French papers. We have, on several occasions, recommended a similar system for our churches, so as to carry off the carbonic acid gas from the jets, and thus maintain a cooler and more healthy atmosphere.

An Infernal Machine.

We here give an illustration of an infernal machine which was seen floating down the Potomac on the 7th of July toward the bows of the steam sloop of war *Pawnee*, intended to blow her up and destroy her. It was formed of two iron cylinders, 2 2, filled with powder, and suspended each from an 80-gallon oil cask, 1 1, which floated on the surface of the water. The two casks were connected by a strong rope, 3, 150 feet long, intended to catch against the bows of the vessel and swing the bombs against her sides. A platform, 8, was arranged in the middle of each cask, and on this was coiled a long line of fuse, 9, leading down into the bomb below.

When the casks were discovered, a boat's crew was sent to examine them, who, on approaching, discovered the fuse burning, which they extinguished. It is thought that the machine might have destroyed the *Pawnee* had it not been discovered.



THE SUB-MARINE INFERNAL MACHINE.

Another Novelty in Shipbuilding---An Iron Ship that Cannot Sink.

The London *Times* says:—On Saturday, July 13th, a handsome iron steamship, constructed upon a novel but simple plan, which the patentee affirms renders entire submersion impossible, whatever accident or damage may befall her, was launched from the yard of Mr. Lungley, at Deptford Green. She is divided into compartments by transverse iron bulkheads, but in addition to this precaution, which the experience of the *Connaught* and some other iron steamships that have been lost during the last two or three years shows is by no means an effectual safeguard under all circumstances, she is built in three distinct decks, each being in effect a ship by itself. The advantage of this arrangement is, that if a plate were removed or a hole knocked through the side in either deck, or even if her bottom were torn away altogether, she would still float, there being no communication between either of the lower decks, each of which communicates with the upper deck by a separate shaft or hatchway.

Not only is the danger from water thus guarded against, but the frequently more serious one at sea, of fire, is brought completely under control. Were a fire to break out in the hold, or in either of the compartments, it would be only necessary to close the communicating shaft and leave it to die out of itself, which, as no air could get to it (the several decks being airtight, as well as watertight), it must soon do, or any quantity of water might be pumped down, even to the entire filling of the space between decks where the fire existed. Her engines and furnaces are, of course, placed so high in the vessel that no amount of water in the lower decks would interfere with their free action.

The name of the new vessel, which is the first that has been built upon this patent, is the *Briton*, and she is designed for the Cape mail service, having been constructed for the Union Steamship Company, who have the contract for that service. She is a fine ship of 1,100 tuns, builders' measurement, her dimensions being: Length between perpendiculars, 239 feet; length over all, 262 feet; breadth, molded, 25 feet 8 inches.

There was a large company present at the launch, to whom was exhibited, by means of models, the capabilities of vessels constructed upon Mr. Lungley's patent of maintaining their buoyancy under the most adverse circumstances of leakage. Plugs were withdrawn from below the water line until first the one and afterward the second deck were filled with water, but the hull still floated steadily, though deeper, and showing that in no conceivable case would there be any difficulty in keeping a ship so built afloat until land was reached, even if by means of divers sent down below the leak could not be found and stopped.

The *Briton* is now lying in the river off Mr. Lungley's wharf, near the Deptford dockyard, where she will remain for some time for the completion of her internal fittings; and, as she is likely, in some degree, to aid in the solution of the problem of how far ships can be made impregnable, will, no doubt, become an object of attraction.

English Shoes for the South.

We take the following from the *Shoe and Leather Reporter*.:—"We mentioned some weeks since that Edward Daly, of Charleston, S. C., left for Liverpool in the steamer from Quebec, intending to buy shoes for the Southern army and for the people at large. A gentleman who went over in the same steamer informs us that Mr. Daly has a contract to furnish 80,000 pairs of shoes for the Southern troops, at $2.25 per pair, and that he has placed it in England at rates which insure him a profit of about 80c. per pair. Our informant states that business there is receiving an impetus, from the large orders for dry goods, boots and shoes, trunks, &c., &c., which are being given by southern merchants, several of whom are in England, purchasing goods for cash. Mr. Daly buys men's russet brogans for 75c., men's congress boots, oak leather and sewed at $2, ladies' congress boots at 90c. to $1 12, and other goods in this line in proportion. They are paid for by drafts on Frazier, Trenham & Co., of Liverpool. The prices, it will be seen, are remarkably low, especially for sewed russet brogans, but the gentleman from whom we get our information, says he was present, and in several instances saw the goods purchased. A line of steamers, intended to run between Liverpool and Charleston, S. C., is nearly ready; the first vessel is advertized in the Liverpool papers to leave August 15th, (the time has since been extended, we believe, to Sept. 15th) and when our informant left it was actually loading with these goods. How they are to elude the blockade is not stated; but it is probable that the southerners who have been unsparing in their promises of direct trade, and have depicted its advantages to Englishmen in glowing colors. expect aid from thence to insure the safe carriage and delivery of their purchases. Whether these anticipations are well grounded or not, they correspond with the very sanguine expectations of Southern men in other respects. At any rate, goods to the amount of a million and a half of dollars have been purchased there by Southern merchants for cash, and a portion of them are loading in swift sailing steamers, by which means they may perhaps expect to run the blockade, if the privilege of going in under British guns is denied them."

Cotton in Algeria.

In the course of a recent debate on Algeria, which took place in the French legislative body, one member stated that though in 1854 and 1855 the cultivation of cotton had assumed a certain degree of importance, it has since declined; and that if it were not for the hope of obtaining a prize of 20,000 francs offered by the government, it would be probably altogether abandoned. According to this gentleman, the cultivation cannot be expected to thrive until it shall be undertaken by persons who possess a practical knowledge of it, have sufficient capital, can obtain the manual labor, which is now scarce, and can procure at a cheap rate lands well situated and well watered. A government commissioner admitted that in some parts of Algeria the attempts to produce cotton had failed, because the lands had not been well chosen—but he said that in the province of Oran, where both the soil and the elements are favorable, success has been obtained. He added that the production of the present season will be 124 tuns—not a large quantity, he admitted, but still a satisfactory one, considering the Algerian colonists had only been a few years in trying to grow cotton, and possessed no experience. Another member cited the opinion of an Alsacian manufacturer, who knowing the supply of cotton from America would run short, took the trouble to go to Algeria in order to ascertain personally what chances there are of obtaining supplies from that colony. This manufacturer declared that he considered both the character and the soil of Algeria preferable, or at least equal, to those of the Southern States of America for the cultivation of cotton. This opinion was, however, regarded as exaggerated by the Chamber. In the course of the debate, the suggestion was thrown out that the best thing that can be done to make Algeria a cotton producing country, would be to introduce a number of coolies from China or Cochin China.

LOCOMOTIVE WHEEL TYRES.—The *American Railway Times* states that the use of the Griggs wheel on the heaviest locomotives of the Boston and Providence Railroad has effected a saving of 52 per cent in the wear of the tyres. The body of this wheel is cast with dovetailed recesses on the rim, into which blocks of hard wood are driven with the grain crossing the rim. The tyre is turned to fit on the rim and have its bearing on the wooden blocks, which act as cushions to absorb the effect of the shocks received from the rail joints.

TRANSPLANTING VEGETABLES AND ANNUALS.—Seedlings may be safely transplanted in hot and dry weather, if shaded for a few days by a common flower pot. The hole at the bottom serves as a chimney. Toward evening take off the pot, and replace it in the morning. Raise the side by a stone placed under, as the plant becomes established, and finally remove it altogether. The pot keeps the ground moist, and is much better than watering.

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RECENT AMERICAN INVENTIONS.

Electro-acoustic Telegraph.—The advantages sought to be obtained by this invention, which the inventor denominates the "Electro-acoustic Telegraph," are, first, the inviolable secrecy of all important telegraphic communications, and, second, the saving of expense in the working of telegraph lines. It is a common practice in telegraph offices to read and write down the message from the sound or click of the magnets; and with the apparatus ordinarily used the sound can frequently be heard in all parts of an office, and even outside, with such distinctness that the messages may be understood not only by the confidential clerk, whose duty it is to write them down and send them inviolate to the person or persons for whom they are intended, but by other persons of quick ear familiar with the telegraphic alphabet, who may be, by accident or design, in or near the same office, or in or near other offices whose magnets are in the same circuit, and consequently are similarly acted upon to the magnet in the office for which the message was intended. To obviate this objection this invention consists in so applying an acoustic tube in combination with the lever carrying the armature of a magnet, or with any other instrument for producing sounds by electricity, that a person having a tube applied to his ear may hear the sound, while it is inaudible to persons at a very short distance from the instrument. It also consists in the employment, in combination with a so applied acoustic tube, of a cover of glass or other material enclosing the instrument for the purpose of preventing the sound escaping in any great degree, except by the acoustic tube, and of aiding to carry the sound into the said tube. The saving of expense results from so little sound being required when all is conveyed to a point where alone it is wanted, viz., the ear of the operator, that the long circuit magnets will serve every purpose, without the use of local magnets, circuits or batteries, though these, of course, may be used if desirable to apply the invention in connection with any of the present modes of telegraphing. The inventor of this improvement is Alexander Bain, of New York city, the patentee of the chemical telegraph, the patent for which has recently expired.

Water Meter.—This invention relates to the class of meters which effect the measurement of the water or other liquid by its action upon a screw or spiral bladed wheel. A great obstacle to perfect measurement by this class of meters has hitherto been, that the velocity of rotation of the screw or wheel has been greater relatively to a high velocity of the passage of the liquid through it than it has been to a low velocity, and, in many examples, the liquid might be drawn through the meter very slow, without moving the screw or wheel at all. The invention consists in a certain construction of the screw or wheel, and mode of applying the same to the shaft, and in relation to the mouth of the passage through which the liquid is admitted to act upon it, whereby the abovementioned difficulty is obviated. G. Kober, of New York city, the inventor of this improvement, recently met his death by a railway accident.

Extension Table.—The object of this invention is to obtain an extension table which may be extended and folded with far greater facility than those in ordinary use, be stronger and firmer when extended, and possess the advantage of having all its parts permanently connected together, so that in extending the table no additional leaves will require to be added to it, and consequently none required to be detached and removed when folding it. The invention consists in having a series of leaves connected together, and to beds by hinges, the beds being supported by suitable legs, and the leaves supported and the whole device braced, when in an extended state, by means of hinged bars. Stephen M. Rounds, of Somerset, Mass., is the inventor of the device.

Coffee and Tea Pots.—In the construction of common or cheap coffee or tea pots which are manufactured wholly of tinned plate, straight conical tinned spouts or slightly curved ones, have been used, no other cheap form of spout having hitherto been devised. These straight or slightly curved tinned spouts have an exceedingly homely appearance, and other parts of the pot which might be made neat and ornamented at a trifling expense, are necessarily made plain in order to correspond with the spout. In the more expensive kinds of tinned plate coffee and tea pots, Britannia metal spouts have been used, the same being soldered to the tin body of the pot. These spouts admit of being made quite ornamented, but they are comparatively expensive, and the expense of soldering them to the bodies of the pot is attended with a considerable expenditure of time. The credit of this invention is due to E. A. Kelsey, of Meriden, Conn.

Valve Motion.—This invention is more particularly intended for direct-action steam engines, for pumping, blowing, and other purposes, for which a reciprocating motion is required, and no rotary motion is necessary. It consists in a certain arrangement and means of operating a secondary valve for admitting steam to act upon pistons to complete the movement of the main valve after its movement has been partiy accomplished by a connection with the main piston rod. William J. Stevens, 238 West Thirty-second street, this city, is the inventor.

WATER FOR DRINKING.

A very intelligent correspondent of the Philadelphia *United States Gazette* directs attention to the evils of drinking ardent spirits by soldiers, and to the importance of obtaining good water for drinking. He states that water of an average purity is indispensable for digestion and the elaboration of good blood, while, on the contrary, water that is *very* hard and contaminated with vegetable and animal matters disorders digestion and gives rise to innumerable secondary affections of the kidneys, skin and nervous system.

Limestone water abounds in the northern and middle portions of Virginia. It is often, at first, unpleasant to the taste, and disorders the bowels of those unaccustomed to it, but it soon becomes palatable, and agrees well with the digestion. Water slightly impregnated with sulphur is quite common in the same regions, and is used for all purposes by the inhabitants without inconvenience or detriment to health. The same remark applies to chalybeate waters, which come under the class of hard, and are not adapted to washing or satisfactory cooking.

The water in Eastern Virginia, in the vicinity of Richmond, generally affects strangers for a few days with bowel complaints, but the derangement to the system soon passes away.

The transparency or clearness of water, which is regarded by most persons as a sign of purity, is not conclusive. On the other hand, turbid river water, when the earthy matters which are mixed with it are allowed to subside, becomes a wholesome and even agreeable drink. This has been noticed in the waters of the Nile, Missouri, Mississippi, &c.

Various means have been adopted to correct the impurities of water. These consist chiefly in filtration through gravel, sand and charcoal. The separation thus procured of foreign substances suspended in the water is mechanical. The preferable method of filtration is by ascension. An improved apparatus consists of a small box having at its lower part charcoal between two layers of sand. The passage of water through this kind of filter is sometimes accelerated by artificial pressure, by which, from an equal body and surface of water, seventeen times the quantity can be passed as through a common filter at the same time. The nauseous odor and disagreeable taste imparted to water by vegetable or decayed substances or animalculæ are removed by filtration through animal charcoal or by common filtration and subsequent boiling. Water after being boiled, as well as that procured by distillation, is flat and insipid, owing to its being deprived of fixed and atmospheric air, or of carbonic acid and oxygen gases, and on this account it should be frequently stirred in the open air, so as to facilitate the absorption of these gases.

The Chinese had long been in the practice of clarifying the turbid water of their rivers by stirring the fluid which had been drawn with a bamboo cane, into the hollow joint at the end of which a piece of alum had been introduced.

The refreshing and salutary effects of water as a drink are greatly increased by its coolness, to procure which the people of hot climates have had recourse to devices, all based on the refrigerating process of evaporation from the moistened surface of the vessel which contains the water. Ice is the best substance known for cooling water, but it cannot be obtained by soldiers or travelers.

Soldiers should never fill their canteens with whisky because it cannot quench thirst, but rather aggravates it. The next best thing to ice for keeping the water in a canteen cool, is to keep the flannel with which it is covered, continually moistened. The evaporation from the surface absorbs the heat from the water within.

Ozone as a Bleaching Agent.

In *Liebig's Annalen* the following method is recommended for restoring the color of old, spotted, and soiled books and prints:—"Ozonize the air in a sulphuric acid carboy, which is done by placing in it a piece of phosphorus three inches long and half an inch thick, and pouring on it as much water at about 86° Fahrenheit as will half cover the phosphorus. The carboy is loosely corked and allowed to stand in a moderately warm place until the air is charged with ozone, which generally requires from twelve to eighteen hours. Without removing the phosphorus and water, the article to be bleached is uniformly moistened with distilled water, and after being rolled up, is suspended by a platinum wire in about the center of the carboy. The roll is soon seen to be surrounded continually by the columns of vapor rising from the surface of the phosphorus. The time required for the bleaching depends on the nature of the substance, but it is never more than three days; paper, brown with age and colored with coffee spots, in two days becomes white and clean. When removed from the carboy, it should be rinsed first in repeated baths of distilled water, then immersed in a very dilute solution of soda, then again washed in distilled water, and finally dried between the folds of blotting paper. This process does not succeed so well with oil colors.

Augendre's White Gunpowder.—It is composed of ferrocyanide of potassium, chlorate of potash, and sugar, in the following proportions:—

Ferrocyanide of potassium	28
Chlorate of Potash	23
Sugar	49
	100

Its density, as compared with ordinary black gunpowder, is as 0.774 to 1, and the work it performs, taking equal volumes, is as 1.292 to 1. In order to produce the same effect on projectiles in firing mines, &c., 60 parts of white would be required for 100 parts of black, the weights of the residues being respectively 31.53 and 68 parts. Another advantage is stated to consist in the lower temperature produced by the flame of the white gunpowder, so that a greater number of shots could be fired without heating the piece too much. This new powder corrodes fire arms or it would be superior to common powder.

New Cartridge.—The Ordnance Department has ordered a new metallic cartridge to be tested at West Point. The case is made of tin, in the shape of a cone, and has two weak points in its circumference. When it is in the cannon, its apex touches the breech-piece, and thus a chamber is formed between the cartridge and the cannon, said chamber being in the rear of the cartridge. The cartridge is pricked by forcing a sharp instrument down through the vent. When the charge explodes, a portion of the gas escapes through the weak points of the cartridge into the air chamber, and, by its pressure, instantly forces the metal case out of the gun. The value of this cartridge lies in the fact of its loading at the muzzle, and yet clearing the cannon at every shot in so perfect a manner that swabbing repeatedly is unnecessary.

Signs of Military Rank.—The relative rank of officers in the regular army is designated in the fatigue uniform, worn in accordance with the army regulations, in the following manner:—A major general is distinguished by two silver stars on his shoulder straps; a brigadier general has but one star; a colonel has a silver embroidered spread-eagle; a lieutenant colonel has a silver embroidered leaf; a captain is known by two embroidered bars; a first lieutenant has but one gold bar on the strap; a second lieutenant, none at all. The cloth of the strap is as follows:—Staff officers, dark blue; artillery, scarlet; infantry, light (or sky) blue; riflemen, medium (or emerald) green; cavalry, orange color.

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Thallium and the Prism.

This reads very much like the title of a fable; and although what I am going to relate would have appeared in by-gone ages almost fabulous it is nevertheless as true and real as that when the sun rises the day dawns.

Thallium is a metal, and a prism is a triangular stick of glass. To find a needle in a stack of hay is but a simple affair, compared to searching for thallium on the face of the earth; yet it has been found, and can be found again with the greatest facility, and that, too, by means of a prism.

By a newly discovered property of the prism, we may say that we have added to man's visual faculty a power as great beyond the microscope, as that instrument surpasses our unassisted vision. There are planetary systems in the heavens discovered to us by means of the telescope, so far from our globe, that the human mind is incapable of forming a proper conception of the distance; there are living organized creatures inhabiting this globe discovered to us by the microscope, so small as to astound belief of there reality—we have seen in the most minute fishes' fins streams of vital blood pour through the conduits in them with the velocity of a rapid river. And there are substances which help to compose this earth, so rare, that through all time and ages which man has inhabited and trod the face of it, yet in this very year they have been seen for the first time, and discovered to us by the prism. Imperfect prisms are common enough; they form the luster-drops of chimney candlesticks, and are seen round ornamented gas chandeliers. A perfect prism must have all three sides of the drop exactly alike. Now we can readily procure from an optician's shop a true prism for a couple of shillings, and being in possession of it, we may pursue with it many pleasing experiments. The first is to see Newton's Isis or the Rainbow Band of Light. If we hold the prism in an horizontal position near a window into which the sun is shining, and allow the light to fall upon one face of the prism, there will be seen on the wall at the back a reflection of colors like the rainbow—violet, indigo, blue, green, yellow, orange and red. If in place of the sun an artificial light is employed, a similar reflection of colors is produced in like manner, but the relative proportions of the tints vary according to the nature of the flame. And now we come to unfold the secret of the discovery of thallium and other rare bodies.

It has long been observed that certain substances when burning, or even in contact with burning materials, make the flame of a definite tint. Strontian, an earthy body, found near Strontia, in Argyleshire, imparts to flame a crimson color; boracic acid turns the flame green; common salt renders it yellow; chlorate of potass blue, and so on. Now supposing we were examining the isis band, or reflection of light, produced by a spirit-lamp passing through a prism, it would be noticed by a careful observer that there would be a cross-bar of light issue from the side of the isis like a needle, like a ray of light which it is; but this cross ray will at times not only have a peculiar color, but it will shoot out of a particular part of the isis band. Thus it is now found that every substance in contact with flame engenders a particular line of its own, which is always alike, in the prismatic spectrum. Recently some philosophers engaged in mapping out these lines, their color and position for known substances, repeatedly observed lines which they were unable to account for. This led to further search; and the almost immediate result was the discovery of thallium, cesium and other elements. This mode of analysis by light enables us to discover the presence of a body in such infinitesimal proportions, that even decimal fractions cannot describe. Further analysis by light proves the presence of nickel and iron in the sun. What knowledge we shall gain the sequel will prove, even without the moral—"Though the worlds are diversified, there is a unity in the whole."—*Septimus Piesse.*

New Insects Injurious to Vegetation.

The editor of the Springfield (Mass.) *Republican* says: "We have recently paid special attention to two insects that have made their appearance in this vicinity. The first is an orange-colored fly or louse, with feet and wings, so small that a dozen can gather on one side of a kernel of wheat, and so numerous that the wheat heads are tinged with their coloring. This animal we learn is found on all the wheat fields of this section and as far west as Buffalo, N. Y. Whether it does any injury is not fully determined. It seems simply to have rested in great numbers on the heads of wheat, and in some cases oats. It does not answer the description of the weevil or Hessian fly. The other insect is a dark striped worm, more than an inch in length, and first seen in great numbers about the 20th of June, on a piece of spring wheat in West Springfield. The seed of the wheat came from the west. These worms at first stripped the stalks of leaves, and have latterly operated on the heads of wheat. They eat the chaff ends of each kernel, trimming off the beard, and invariably drop to the ground when disturbed. On the 27th they commenced operations on an adjacent field of corn, eating the tenderest portion of the leaves and choosing largely the suckers. The leaves of the corn in some cases are stripped to the stem, and in others the worm inhabits the center of the plant and intercepts the protruding tassel. The creature appears to love shade, works most in the night, has about a dozen pair of legs, is active, eats ravenously and voids profusely. Where he belongs, or what his name is, no one seems to know."

[The description of the last-named animal applies exactly to the destructive army worm of the West.—EDS.

How the Telescope was Invented.

"We have spoken," says *Macmillan's Magazine*, "of the telescope as an *enfant trouvé*. The matter of its invention is said to have been in this wise: Once upon a time—two hundred and more years ago—the children of a spectacle-maker were playing with some of their father's glasses before his door. They poke them here and there, till—what is it they see? The distant steeple appears to be brought almost into their own street. Paterfamilias is apprised of the phenomenon. He verifies it, but it passes his philosophy to tell the youthful inquisitors 'the reason why.' Like a sensible man, he screws the glasses on to a board, casts a covering about them, and secures the fact. The 'spyglass' played subsequently far too grand a *rôle* not to attract the envious glance of national rivalry; and we have, in fact, the same legend repeated by more writers than one, always, of course, with a patriotic change of the place. The learned and unfeeling *sayans* of the present day declare the stories to be all fudge. 'The number of the competitors for this honor,' observes Sir David Brewster, 'affords the most unequivocal evidence that the telescope was brought into the condition of a portable and efficient instrument by steps so gradual, that no individual had any real claim to be considered as its inventor.' Ugh! for the Herod of our Innocents of Invention! We claim the honor for our little Flemings, and crown Middelbourg as the 'Stammort' of the numerous and refined family of the Dollands of our day."

SOME DEFECTS OF BAR IRON.—Two common defects of bar iron are known as red short and cold short. Red short iron is that which cracks when bent or punched at a red heat, although it may be sufficiently tenacious when cold. Cold short iron, on the contrary, is weak and brittle when cold, but can be worked without much difficulty when hot. The quality of a bar of iron may be tested by nicking it at one side with a chisel, and then breaking it or doubling it down at the notch. If the iron be cold short, it will break off at once with the blow of a sledge hammer. But if the bar be of good quality, it will not break off but bend double, and those portions of it to the depth of the notch on both sides will separate a little from the body of the bar, and split up like a piece of fresh ash stick, exhibiting a clear, distinct, silky fiber. If this appearance be produced on a cold bar, and it be then raised to a cherry heat, and bent first in the direction of the pile and then at right angles to it, without cracking on the outer side of the bend, it is of excellent quality, neither red short nor cold short. A very small amount of phosphorus will make bar iron brittle, so small a portion as 0.5 per cent having been found to make it cold short. Sulphur has been assigned as the cause of the short property of wrought-iron; the presence of only 0.0001 of sulphur renders the iron very difficult to work at a welding heat.

Varnishes.

Very superior varnishes are made with a solvent composed of highly rectified alcohol and benzole, instead of using, in the common way, alcohol alone. The alcohol should be nearly pure, and equal portions of it and the benzole mixed together.

The following are different varnishes made with gum-resins and alcohol—benzole solvent:—1. For carriage varnish—copal, 28 oz.; amber, 8 oz.; anime, 4 oz.; camphor, ½ oz.; solvent, 1 gallon; 2. Varnish for external use—copal, 28 oz.; amber, 4 oz.; anime, 4 oz.; camphor, ½ oz.; solvent, 1 gallon. 3. Furniture varnish—copal, 24 oz.; shellac (bleached), 8 oz.; olibanum, 4 oz.; camphor, ½ oz.; solvent, 1 gallon. 4. Picture varnish—copal, 20 oz.; damer, 12 oz.; mastic, 8 oz.; solvent, 1 gallon. 5. White hard varnish—copal, 8 oz.; mastic, 16 oz.; sandarac; 4 oz.; camphor, ½ oz.; solvent, 1 gallon. 6. French Polish—shellac, 32 oz.; solvent, 1 gallon. 7. Another French polish—Shellac, 32 oz.; olibanum, 4 oz.; solvent, 1 gallon. 8. Varnish for prints and maps—mastic, 16 oz.; sandarac, 16 oz.; Canada balsam, 4 oz.; solvent, 1 gallon. 9. Varnish for iron (to be applied hot)—resin, 12 oz.; sandarac, 16 oz.; seed lac, 6 oz.; solvent, 1 gallon. Preparations of lacker—1. Sandarac, 26 oz.; shellac, 6 oz., turmeric, 6 oz.; gamboge, 1 oz.; solvent, 1 gallon 2. Seed lac, 18 oz.; amber (fused), 6 oz.; gamboge, ½ oz.; dragon's blood, 1 oz.; saffron, ½ oz.; solvent, 1 gallon. 3. Seed lac, 8 oz.; copal, 4 oz.; sandarac, 12 oz.; turmeric, 2 oz.; aloes, 1 oz.; gamboge, 1 oz.; dragon's blood, ½ oz.; solvent, 1 gallon.

The benzole and alcohol should be previously mixed together in equal parts, and distilled together with 7 ounces of caustic lime to each gallon. The gum-resins should be reduced to as small pieces as possible before being fed into the solvent.

Filling Shells with Molten Iron.

In the large marsh at Woolwich, England, some experiments have lately been made with artillery shells filled with molten iron. A number of gun-carriages, platforms, and men formed of wood, representing artillerymen, were arranged about a battery, and a shower of these molten iron shells were fired at them from a distance by a 68-pounder. The effect is represented to have been terrific—the shells consumed everything upon which they fell. Three hundred new cupolas, for melting iron for these shells have been furnished at Woolwich for distribution among the batteries on the British coast. Each cupola consists of an outer shell of plate iron lined with fire-brick, and a fanblower is used for each as in all our iron foundries. The driving gear of the fan is so constructed that whenever steam power is available it can at once be applied. When the blast-fan is driven by manual labor, eighteen men are required to work it, with short reliefs. In about twenty minutes after the fire in the cupola is lighted the iron is put in, and in about a quarter of an hour after the fan has been put in motion the molten iron can be run off into the shells. A tun of metal can be melted in about thirty minutes. Allowing, therefore, for waste, the number of shells that can be filled in one hour is 140 of the eight-inch 68-pounders, and the same number of the ten-inch 96-pounders. The estimated weight of the machine is five tuns.

To Dress Skins for Drum-Heads.

A correspondent, writing to us from Racine, Wis., imparts the following information respecting the method of dressing skins for drum-heads, so as to obtain them clear and devoid of opaque spots:—"The best skins for making drum-heads are green-calf or colt. The latter are best but very scarce. Opaque spots are common in some skins that are dressed; this greatly depreciates their value. The cause of this is ignorance of the mode of dressing. All skins can be rendered clear by wetting them thoroughly, then stretching them on the frames, and never touching them until thoroughly dry. Opaque spots are caused by handling the skins before they are dry when on the frames, or else by not wetting them sufficiently before the stretching operation. Clear, soft water alone should be used in the dressing operations; all acid should be avoided as it tends to impair the strength of the skin, and yet many persons use it—in ignorance, no doubt, of the real effect. Before the skins are ready for stretching, it will be understood that they are frazed, in other words, the grain taken off."

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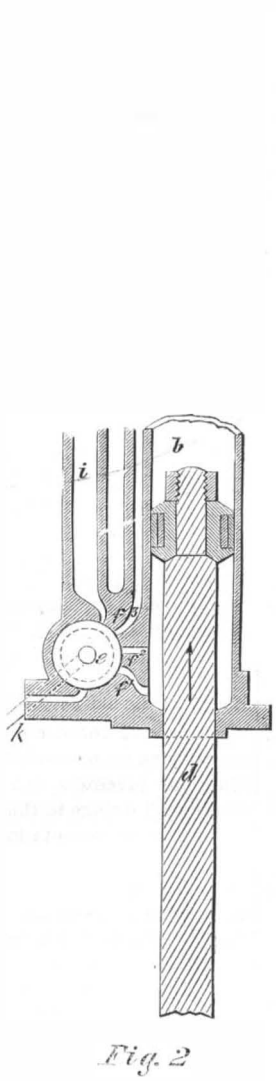
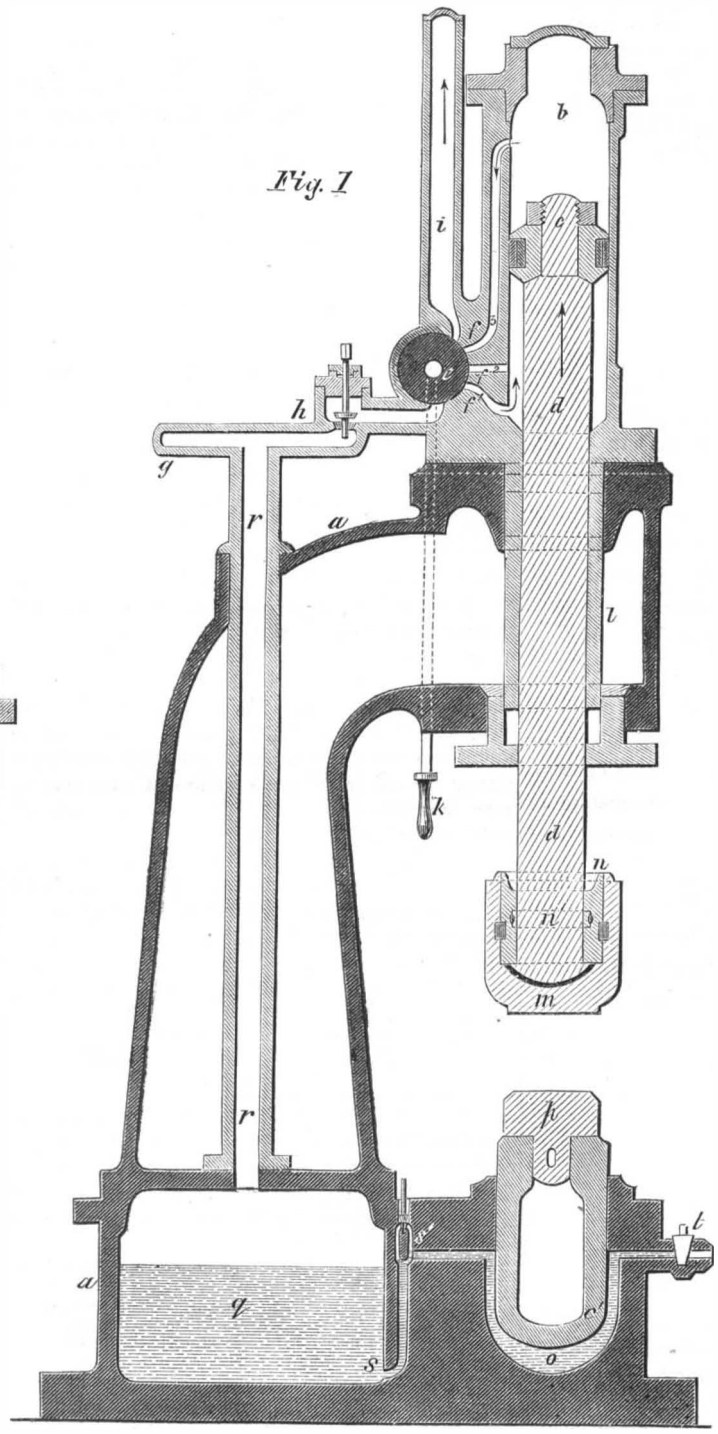
Improved Steam Hammer.

By this novel invention the anvils and hammers are so arranged that their position is adjusted by hydraulic pressure, and the force of the blows given and received by them is transmitted through fluid.

The invention is thus described by the patentees, reference being had to the cuts, of which Fig. 1 is a section of a steam hammer-striker and anvil, and Fig. 2 is a section of a portion of the same.

a is the framing, which may be either a hollow column, as represented in the drawing, or a ribbed girder; *b* is the steam cylinder, *c* the piston, and *d* the piston rod, which is made of large diameter, in order to obtain the necessary weight and strength, and at the same time to occupy considerable space in the cylinder under the piston, so that the steam may be worked expansively for the down stroke, as hereinafter described; *e* is the steam slide, which is slightly curved and fitted into a case, from which three ports, f^1 f^2 f^3, communicate with the cylinder; *g* is the steam pipe from the boiler, and *h* a valve which can be held down to its seat by means of a screwed spindle, and which, when the spindle is screwed up, is free to rise, and permit the steam to pass from the boiler; the slide, *e*, has two notches, e^1 and e^2, such as that, when it is in the position shown in Fig. 1, steam coming from the boiler through the valve box, *h*, passes through the notch, e^1, and the port, f^1, into the cylinder, and pressing on the lower annular surface of the piston causes it to rise while the steam passes from the cylinder above the piston through the port, f^3, and the notch e^2, into the waste steam pipe, *i*; but when the slide is turned partly round by a suitable lever, *k*, worked by hand, so as to bring it into the position shown in Fig. 2, the steam from the under side of the piston can pass by the port, f^2, and the notch, e^2, into the port, f^3, and thence to the cylinder above the piston, where the space is of greater capacity than the annular space below the piston, and expanding therein, press the piston downward. The port, f^3, opens into the cylinder at some distance below the cover, so that the piston, in its ascent, after passing the mouth of that port, cushions against the steam remaining above it, and the port, f^2, is also at some distance above the bottom of the cylinder, so that the piston, in its descent after passing the mouth of that port cushions against the steam left below it, which is prevented by the valve, *h*, from escaping by the port, f^1, even if the slide should leave that port uncovered; *l* is a gland for preventing leakage round the piston rod, and also for guiding it, the lower end of the piston rod has a collar projecting all round and a rounded bottom which nearly fits into a cavity in the cup-shaped striker, *m*; *n* is a ring free to slide on the piston rod, but secured by keyes into the mouth of the striker, which is recessed so as to receive it; the ring, *n* has a cavity, n^1, with an oblique edge in its inner side, and the piston rod has a slight projection all round where that cavity surrounds it; the small space left between the rounded end of the piston rod and the cup of the striker is filled with oil or other suitable liquid, so that when the striker delivers a blow, the pressure resulting from the concussion is transferred through this liquid to the end of the piston rod, and such portion of the liquid as may leak, up between the piston rod and the ring, *n*, is caught in the cavity, n^1, and when, after the blow, the piston rod is raised again with the striker hanging to it, the liquid flows back from the cavity, n^1, to the cup of the striker to be ready for the succeeding blow; the object of this arrangement is to save upsetting and damage to the piston rod and parts in connexion therewith, from repeated concussions, by transmitting the percussive force through a liquid cushion instead of through solid material; and this arrangement is applicable to other hammers, even when they are not constructed in other respects according to our invention.





IMRAY AND COPELAND'S STEAM HAMMER.

In the base of the frame there is a cylinder, *o*, fitted with a ram, o^1, working through a leather collar or other suitable packing, and this ram has the anvil block, *p*, fixed upon it, and is supported at any required hight by water forced into the cylinder under the ram, or lowered by letting the water issue from the cylinder, so that the anvil can be brought to a suitable level for the work or tools placed on it receiving their proper stroke from the hammer, while, at the same time, the anvil and ram, being supported on a liquid base, the concussion resulting from the blow is transmitted through a liquid cushion to the foundation, which is thereby relieved of much of the strain resulting from the transmission of the blow through solid materials.

This arrangement of anvil can be applied to other hammers, by making the cylinder and ram unconnected from the framing, and supplying the cylinder by water at sufficient pressure to raise the ram either from a pump or an elevated cistern, or by other means as may be found suitable. When this anvil is used in connection with the hammer, constructed according to our invention, we find it convenient to work it in the following manner:—

A portion, *q*, of the hollow base of the hammer forms a cistern connected with the main stem-pipe by a branch, *r*; from the cistern, *q*, a channel, *s*, with a valve, s^1, like the steam valve, *h*, above described, communicates with the cylinder of the anvil, and from the cylinder there is a waste cock, *t*. The valve, s^1, being held down by its screwed spindle, the condensed water from the steam pipe flows into the cistern, *q*, where it is subjected to the steam pressure.

On screwing up the spindle of the valve, s^1, the water being under pressure passes through it and raises the ram, and the valve, s^1, shuts to prevent the return of any water from the cylinder when the anvil receives a blow. When it is desired to lower the ram, the valve, s^1, is screwed down, and the stop-cock, *t*, is opened so as to allow a portion of the water in the cylinder to flow out.

This improvement in steam hammers was invented by John Imray and James Copeland, of the County of Surrey, England, and patented in England March 7, 1860. We are not aware that it is protected by Letters Patent in the United States.

Balloon Reconnoissance.

The veteran and daring balloonist, J. La Mountain, has been at Fortress Monroe making ascensions and examinations of the secessionists' positions in that vicinity. On the 3d instant he tried a new scheme in aerial scouting, by taking his balloon on board of the steamboat *Fanny*, and when out in the middle of the river ascended 2,000 feet, with the balloon secured by a rope to a windlass. The *Fanny* then proceeded slowly down toward Sewall's Point, drawing the balloon while up in the air, halting, when opposite, for a time, and then proceeding on toward Craney Island and Pig Point. After a long reconnoissance of the points thus brought under his supervision, Mr. La Mountain came down to the boat, attached his balloon to its stern, and came back to the fortress. He reports that behind the trees on Sewall's Point he saw the labors on the fortifications actively progressing, and that a large number of guns, on cutting away the trees will be made to bear on the Rip Raps, on the fortress and on the shipping. The rebels ran when they saw him in the air, leaving their works and peeping at him from their shelter and behind trees.

A LINE of telegraph is now in operation between Constantinople and Bagdad, the Moslem ancient capital, on the river Tigris. It seems as if the telegraph was going to galvanize the old Turk.

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Scientific American

MUNN & COMPANY, Editors and Proprietors.

PUBLISHED WEEKLY
At No. 37 Park-row (Park Building), New York.

O. D. MUNN, S. H. WALES, A. E. BEACH.

TERMS—Two Dollars per annum.—One Dollar in advance, and the remainder in six months.
Single copies of the paper are on sale at the office of publication, and at all the periodical stores in the United States and Canada.
Sampson Low, Son & Co., the American Booksellers, No. 47 Ludgate Hill, London, England, are the British Agents to receive subscriptions for the SCIENTIFIC AMERICAN.
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VOL. V. NO. 7.....[NEW SERIES.]....*Seventeenth Year.*

NEW YORK, SATURDAY, AUGUST 17, 1861.

INFORMATION AS TO THE PATENTABLE NOVELTY OF INVENTIONS.

The list of claims published from week to week in these columns, indicate truthfully the extent of business being transacted at the Patent Office.

It will be observed that inventors are far from being dormant, if they are not as numerous and active, as they were a year ago. Since the first of July we have received a great accession to our subscription list of new subscribers, and for the information of each, we would state that it is the custom, at the office of this paper, to examine models or drawings and descriptions of alleged new inventions, and to give written or verbal advice as to their patentability, without charge. Persons having made what they consider improvements in any branch of machinery, and contemplating securing the same by Letters Patent, are advised to send a sketch or model of it to this office. An examination will be made and an answer returned by early mail. Through our Branch Office, located directly opposite the Patent Office in Washington, we are enabled to make special examinations into the novelty and patentability of inventions. By having the records of the Patent Office to search, and the models and drawings deposited therein to examine, we are enabled to give an inventor most reliable advice as to the probabilities of his obtaining a patent, and also as to the extent of the claim that it is expedient to set up when the papers for an application are prepared. For this special examination at the Patent Office we make a charge of Five Dollars. It is necessary that a drawing and description or a model of the invention should accompany the remittance. Address—

MUNN & Co., No. 37 Park-row, New York.

REMARKS ON THE DIRECT TAX BILL.

We publish upon another page a summary of the Direct Tax Bill which has been recently passed by Congress. This subject is one so novel and so peculiar that it strikes the American people with surprise, and already we hear whisperings of discontent at some of its provisions. The object of this direct tax is to raise $20,000,000, an amount sufficient to pay the yearly interest on the public debt. Our people hate to be taxed, but none more so than our Southern brethren in arms against us. Hitherto we have been able to maintain a powerful government at comparatively a small expense raised by indirect taxation; none felt the burden of the government, while all enjoyed its inestimable blessings. For once in its whole history, by a strange combination of events, a citizen taken from the common walks of life, was constitutionally elected President who was regarded with much disfavor by a portion of the States, and this was seized upon as a pretext on their part to declare themselves independent, and a rush was made to arms to vindicate this position. The government was assailed long before the present incumbent entered upon the duties of his office, and large amounts of property was wrested from its possession by violence, such as no other government on earth would have submitted to without a struggle. The government was tottering upon its base and was threatened with overthrow.

Only two alternatives presented themselves. Either to allow the government to be overthrown by armed violence, or for the people to rise in its defence. The loyal citizens determined on the latter course. They saw it was their only hope, and they were swift to obey the call of the country, not simply as partisans of the President in power, but as loyal supporters of a kind and forbearing government.

All governments have their severe trials, and ours ought at least to show vitality enough to withstand one election of Chief Magistrate for four years without suffering an overthrow, even though he may be distasteful to a certain section of the country. If defeated parties are to learn from this solemn lesson in our country's history, that their discomfiture at the polls can be removed at once by a resort to arms —bullets instead of ballots—then there remains to this people nothing but anarchy and confusion, the rënactment of those violent struggles such as have marked the history of Mexico during the past few years.

We confess that all our ideas of good government founded upon social order, and security for person and property, revolt instinctively against such theories. Of course no one could have conceived the ridiculous idea of a government undertaking to sustain itself from overthrow against a formidable rebellion, without a most serious drain upon the taxable resources of the people. The cost of our vast military and naval operations necessary to achieve the great ends which the government has in view are enormous, and it rests with the people now to say whether these ends shall be urged forward or whether we shall let the government go to a quiet and ignominious grave.

These are the two plain propositions now before the people, and it is for them to determine which horn of the dilemma they prefer. Some say it is the politicians who have done it all. True, indeed, and if about a hundred rabid ones on both sides had been hung during the last twenty years we should have had no such troubles. This reflection, however, does not mend the matter. We must now meet the issue forced upon us, and there seems to be but one honorable course left open, viz.: to uphold the government by all proper means, and to cheerfully contribute to its support. Our fathers in the revolution suffered and bled and died to lay the foundation of a free government. Its last hope would expire upon the ruins of the Republic.

AN EXTRAORDINARY PATENT SCHEME EXPLODED.

The following paragraph has recently made its appearance in a Southern journal and has been copied into two of our city journals. As it deeply concerns the character of the Editors and Proprietors of the SCIENTIFIC AMERICAN, we make room for the extract, which runs as follows;

LOOKING TO THE FUTURE.—A gentleman of New Orleans has furnished us with the following extract from a letter addressed to him by a New York firm. The writers are rabid Black Republicans, but show that they have, at the same time, a sharp eye for business. It will be seen that they regard it as a fixed fact that "the Southern States will soon be a recognized government independent of the North." On this idea, these precious souls who have been contributing to the wicked invasion of our country, are laying their plans to make money out of us, and asking a Southern citizen to become a partner in his Yankee scheme. They will have the consolation of knowing that they missed their man; and if they pursue their inquiries they will find that our government has already taken the necessary legislation to forestal any such handsome business operation as they propose.

NEW YORK, April 21, 1861.

DEAR SIR:—Knowing your long connection with the Patent Office and familiarity with its details, we are induced to address and make a proposition which we hope will be both acceptable and profitable to you. The fact is now patent to the world that the Southern States will soon be a recognized government independent of the North, and amongst its other functions will be the establishment of a Patent Office. . . . Undoubtedly, the patents heretofore granted by the United States will be in some form recognized and secured to the inventor or assigns. . . . We have now control of several hundred, and by an effort can secure as many more. You, we suppose, can control as many more. Now, we propose that our firm and yourself obtain the control of as many as possible, and that you take the necessary steps to secure the patents for the Confederate States. We will advance, from time to time, all the money necessary, and divide equally the profit. The South must of necessity, in a few years, become somewhat a manufacturing country, and by securing the control of existing patents, we can, to a great extent, secure to ourselves a monopoly. There is scarcely a machine or instrument of common use but is covered by one or more patents; and, to a person of your practical sense, it is unnecessary to say what the effect would be, both to ourselves and others. By the control of the patents we can dictate our own terms to manufacturers and mechanics.

Yours, &c., MUNN & CO.

Language is too poor to do justice to this subject, but we will venture upon it. The letter above printed, purporting to have been written by us, is an impudent forgery from beginning to end, and its author is an unmitigated scamp and deserves to be strung up within the coils of a hempen noose. The editor who published the letter and furnished the comments, is either a dupe or a knave. If the former, he will correct his error; if the latter, we shall only expect additional abuse from him. No such letter, written by us, nor anything like it, can be produced, and we challenge any party to bring it forward.

We have repeatedly been solicited by Northern and Southern men (and probably by this scamp also) to enter into some arrangement with them for securing patents in the "Confederate States," but we have uniformly declined to do so upon the ground that no patent system of the "Confederacy" could have any legitimate bearing upon our citizens until the independence of those States is formally recognized by the Federal government.

Our government is proceeding upon the theory that the Union is not dissolved, and until this position is abandoned, citizens would be guilty of a certain amount of treason to connive in any way with those who are in arms against its authority. We wish our readers to understand that we have not yet reached that degree of abasement.

The author charges us with saying that "we have now the control of several hundred patents," which is a base lie. We have not the control of a single existing patent, and have not a cent's interest, pecuniarily, either directly or remotely, in any patent ever granted by the United States government.

Whenever the independence of the "Confederate States" is recognized, we shall then be prepared to do business for inventors in those States as with any other foreign power, but we never expect to be guilty of any such conspiracy to defraud inventors and the public as is set forth in the above letter. Its author is a scoundrel. Can we speak plainer?

Inventors Should not Confine their Ingenuity to War.

No class of the community has contributed more for carrying on successfully the war against rebellion than our inventors, and they have not done yet. Every mail brings to this office scores of letters suggesting improvements in articles of warfare. Many of the inventions presented are absurd and impracticable, but something new and useful in this line is being invented every day, and should the present war spirit continue, it will not be long before the inventors in this country will have revolutionized, by their ingenuity, the science of warfare as now practiced.

But inventors should not overlook other branches of science and mechanism. The war is not going to last always, and when peace comes, the public will demand other improvements than those pertaining to warfare, and many will be wise in taking the hint and giving their attention to other branches of mechanical invention—something better adapted to their turn of mind. Now is a good time to invent and to take patents on any class of improvements. Inventions will be wanted before long, if there is not a demand for them now, and we advise inventors to prepare themselves for the demand, by having their patents in hand when the good time of peace comes. It costs no more to take a patent now than it will six months hence, and the slackness of business at the Patent Office is such as to enable the Examiners to act upon cases very soon after coming before them.

Changes in the Patent Office.

The official guillotine is doing vigorous execution in the Patent Office, ten Examiners and Assistant Examiners having been turned out on the 1st instant. Some of the very best men in the office have been decapitated and for reasons best known to the heads of the department. Some of the most objectionable are still retained.

ENGLISH SUPPLY OF COTTON.—By the latest news from Europe the estimated stock in Liverpool was 1,130,210 bales, against 1,334,360 at the same period last year. The money value is, perhaps, about ten millions and three-quarters sterling, against twelve millions and a half last year, when the stock was an unusually large one.

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PACIFIC MAIL STEAMSHIP "CONSTITUTION."

This noble specimen of American naval architecture, constructed by W. H. Webb, of this city, is now lying at the dock of the Novelty Works, receiving her machinery and having her interior fitted up. It is intended for the Pacific passenger trade, and will run between Panama and San Francisco. For this special service, it has been designed with great care, as but few, if any, of the steamships previously built in New York for the Pacific trade were suitably arranged for securing ventilation in that climate. The length of the *Constitution* is 360 feet; breadth of beam, 45 feet. The model is beautiful; we think she will be a very fast vessel.

The interior is designed with great skill and care for the comfort of passengers, and with a keen perception of the beautiful. Under deck it actually appears far more roomy than the *Great Eastern*. It is not cut up with bandbox saloons, like the giant iron steamer; it will have larger and more splendid upper and main saloons than any vessel afloat, and will accommodate about 1,000 passengers.

For securing proper ventilation, the state-rooms will be very large, and lattice work will be secured in every position to insure a full and free circulation of air in all the apartments. Imperfect ventilation has been the prevailing defect in former Pacific steamers; such evils are intended to be entirely remedied in the *Constitution*. The hatches and all the important openings are about double the size of those in most steamers, and ventilating hoods are to be put up to operate like atmospheric siphons, to remove the hot and take in a constant supply of cold air. Two very large blowers are also to be used for ventilation.

The machinery of the *Constitution* is now being fitted up at the Novelty Works. The cylinder is up, two boilers completed, and the other two are in a very forward state, as are also several of the other parts. The following are the dimensions of the engine:—

Diameter of cylinder, inches	105
Stroke of cylinder, feet	12
Diameter of piston rod, inches	11½
Diameter of crank pin journal, do	14
Length of crank pin journal, do	18
Diameter of beam center journals, do	15½
Length of beam center journals, do	21
Diameter of water wheel outside of buckets, feet	40
Length of buckets, do	18
Width of buckets, inches	24
Diameter of water wheel shaft journal, do	22
Length of water wheel shaft journal, do	30
Supplied with Sewell's surface condenser, fitted with 5,500 brass tubes 9 feet long, the condensing of which equals, square feet	8,090

She is supplied with four cylinder boilers with upreturn flues, two placed forward and two aft of engine, the dimensions of which are:—

Diameter of shell	13 ft. 3 in.
Whole length of boilers	32 ft.
Diameter of steam drum	8 ft.
Hight of steam drum	12 ft.
Diameter of smoke pipe	7 ft.
Hight of smoke pipe	41 ft.
Five cylindrical furnaces in each boiler, diameter	40 in.
Fire Surface in each boiler equal to	3,300 sq. ft.
Grate surface in each boiler equal to	115 sq. ft.

These statistics have been kindly furnished us at the Novelty Works, and Mr. Allen freely gave us all the information solicited. It will be observed that the *Constitution* is to have a single beam engine. It is of the same dimensions as that of the steamboat *Metropolis*, but much stronger. The cylinder is larger than that of any other steamship, and the whole machinery will be a credit to American engineering skill.

It will also be noticed that the engine is to be furnished with Sewell's surface condenser, so that pure water will be fed into the boilers. The condenser of Mr. Wm. Sewell, formerly engineer of the United States Navy, is similar to some other condensers excepting at the tube joints. These are secured by vulcanized india-rubber thimble rings, put on by hydrostatic pressure. They permit the joints to play without breaking or causing leakage. The water for refrigeration passes through the tubes of the condenser, and the steam is exhausted on the outside among the tubes. The character of this condenser stands very high.

Two bars of gold have reached London from Nova Scotia, being the first remittance from that quarter since the gold discoveries. It is described as of the average quality of Australian gold.

THE PENETRATION OF BALLS---THE BEST FORM.

The power of penetration which a ball possesses is proportional to the square of its velocity, hence when the object of firing is merely to penetrate, the greatest velocity should always be given. Thus in breeching walls the guns are first directed to cut grooves in the wall, in order to detach a portion from the mass, and this grooving action is best done by the greatest amount of penetration. When the grooves are cut to a sufficient depth in the wall, the portion designed for the breech is battered down by a heavy ball having a small velocity. In close naval engagements, balls having great velocities are not so destructive, as those which, having a small velocity, just pass through the side of the vessel, throwing splinters before them. To give a ball a double initial velocity, four times the quantity of powder is required. Thus a ball weighing one pound, discharged from a gun with two ounces of powder, has an initial velocity of 860 feet per second; with a charge of eight ounces, it has about 1,720 feet.

As regards the weight of shot for rifled muskets, Commander Dahlgren, U. S. N., says:—"The efficiency of musketry depends mainly upon the weight of the ball, and it may be a perilous experiment to err against this axiom. * * * While discussing the subject in England, the well-known persistency of the Duke of Wellington in opposing any reduction of caliber, notwithstanding the gain that might accrue to the movement of the soldier, or to the repetition of his fire, was often cited, and it cannot be denied that the opinions of so able and experienced a commander should outweigh all nice differences. * * * The light shot may be as fatal as the heavier, but the effect of its shock on many parts of the human frame is not equally capable of disabling an adversary." * *

"Conical shot have, perhaps, proportionally less power of shock than round balls, and are more liable to be diverted from their course when they come in contact with a resisting surface which is oblique to their direction."

As it respects the best form of shot for rifled muskets, Commander Dahlgren, says:—"The shot should not be very acute in front, as such form is more liable to have its apex displaced from the axis of the bore, and hence increased inaccuracy of flight; but it should be cylindric at the base, terminating with a conical front which ought rather to be rounded like the English than acute like the French. The latter presents less resistance to the air and substances which it may enter, but of these abundant properties it may well spare something in order to gain more power of shock."

INFLUENCE OF HEAT IN CHANGING THE PROPERTIES OF BODIES.

Heat is the great agent which produces so many wonderful changes in nature and the arts. We daily witness its effects in the visible world around us, and yet we seldom reflect upon the transformations which it effects. Take, for example, the clear albumen which surrounds the yolk of an egg. It is colorless—almost transparent—and is perfectly soluble in water. Now take this albumen and submit it to a temperature of 165° Fah. for a short period, and what a change takes place! The clear matter gradually becomes opaque; then hard, white, and insoluble. If we take glue, and submit it to heat, the effect is altogether opposite. This substance is scarcely soluble in cold water; but if we expose it to moderate heat, it dissolves rapidly. It is also remarkable that when the carbonate of lime crystallizes from cold solutions, it arranges its particles in the form of Iceland spar; but when it crystallizes from hot solutions, the particles arrange themselves in the form of arragonite. Although these two minerals are composed of exactly the same amount of lime and carbonic acid, they really possess very different physical qualities. But perhaps the most remarkable substance known, with regard to the effects produced by heat upon it, is cyanuric acid. It is crystalline; and Liebig states that it is soluble in cold water, and also capable of combining with metallic oxyds, forming salts. But when this substance is heated to a high temperature, in a hermetically sealed vessel, it becomes a volatile fluid, which, if brought in contact with water, is decomposed, and gradually becomes white, resembling porcelain, and is absolutely insoluble. Thus, the same constituents, in exactly the same proportions, when simply subjected to heat, totally change their character by a different molecular arrangement. Phosphorus, also, undergoes peculiar transformations. In its ordinary state, it is almost colorless, and dissolves in bisulphide of carbon in all proportions. In small quantities, it is very poisonous, and when exposed to moisture in the atmosphere, it oxydizes and forms a deliquescent acid. But if we take this substance, and heat it in a vessel from which the air is excluded, up to 482° Fah., it becomes red in color, does not change in moist air, becomes insoluble in the bisulphide of carbon, and is not so poisonous in small quantities.

Zinc is a brittle metal until it is heated to 210° Fah.; at this temperature, it becomes somewhat ductile, while, at 300° Fah., it can be rolled into thin sheets; but if the temperature is raised much above this, it again becomes exceedingly brittle, and will break with the moderate blow of a hammer. Increase the heat still further, and lo! it melts and becomes a gas which floats in the air. Such are some of the wonderful effects of heat, not very generally known.

PERSISTENT ACTIVITY OF LIGHT---MAGNETIC EXPERIMENTS.

The celebrated French photographer and chemist, M. Niepce de Saint Victor, has recently made some valuable discoveries regarding what he calls "the persistent activity of light." He exposed to the influence of bright sunlight for three hours a piece of porcelain plate, then he removed it and laid it upon a piece of paper which had been prepared with chloride of silver. Some parts of the paper were intentionally not laid under the porcelain, for the purpose of discovering what would be the difference, if any, between the covered and uncovered parts. After 24 hours had elapsed, the porcelain was removed, and the paper examined, when it was found that the silver salts were reduced in that part of the paper which had been placed under the porcelain, but no effect was produced in the paper which had not been covered. This led him to conclude that solar light communicated activity to some bodies, which they retained after exposure to the sun's rays. He then tried experiments with a steel plate, one part of which was polished and another part made rough on the surface with strong nitric acid, then washed with alcohol and dried. This plate was exposed to the sun's rays for three hours, and then one-half of the polished part of it, and one half of the rough part, were placed under an opaque screen, with the other portions under a piece of transparent glass. The plate was then laid upon albumenized paper prepared with chloride of silver. After 24 hours' contact—the same time as with the porcelain—an impression of the unpolished portion of the steel plate, acted upon by the light, was obtained; but none from the polished part, nor from the unpolished portion which had been placed under the opaque screen.

A strip of glass ground or roughened on the surface, and cleaned with distilled water, gave the same results as the steel plate; but under a violet-colored glass, the light had less action than under a white glass.

In a paper upon this subject, M. Niepce de Saint Victor says:—

It has frequently been announced that light magnetizes a bar of steel; but after removing every source of error, I have found it impossible to make a needle, solarized for a very long time under the rays of light concentrated by a strong lens, attract another sewing needle suspended by a hair, whether the light was white or colored by being made to pass through a violet-colored glass.

I have also enveloped a needle in paper impregnated with nitrate of uranium, or with tartaric acid, and solarized; I have also suspended a needle horizontally in tubes containing solarized cardboard, and the results were invariably of a negative character, which proves that the activity of which I have spoken above is not due to electricity, as some experimentalists have pretended.

I afterward repeated the first experiments upon needles very feebly magnetized, to see if I could de-magnetize them; but the results were always negative.

From which I conclude that this persistent activity given by light to all porous bodies, even the most inert, in all my experiments, cannot even be phosphorescence. It is, therefore, most probably a radiation invisible to our eyes, which acts like a gas, since it does not pass through glass.

A test of the Sharp's rifle by the Navy Department having proved satisfactory, a large number has been ordered for that arm of the service. Com. Dahlgren's report states that twenty shots were fired in less than 1½ minutes.

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Patent Claims

ISSUED FROM THE UNITED STATES PATENT OFFICE

Reported Officially for the Scientific American.

PATENTEES, READ THIS.

The new Patent Laws which went into force on the 21 of March last, authorized the Commissioner of Patents to have all the specifications which form part of the Letters Patent printed.

This is a wise provision, and it renders the documents much handsomer than the old system of engrossing them on parchment; besides, in passing before the printer and proof-reader, the clerical errors, which were often made by the copyist, are mostly obviated, thus rendering the patent more likely to be correct.

But, to enable the printer and proof-reader an opportunity to do their work properly, the Patent Office is obliged to withhold the Letters Patent after granting them, for about *three weeks* after the claims are published in the SCIENTIFIC AMERICAN.

This explanation is intended to answer scores of letters received from patentees at this office every week, inquiring why they do not get their documents. We trust it will also save the Patent Office the trouble of writing to every patentee to explain the cause of their not receiving their patents the moment they see their claims published in these columns.

MUNN & Co.

FOR THE WEEK ENDING JULY 23, 1861.

*** Pamphlets giving full particulars of the mode of applying for patents, under the new law which went into force March 4, 1861, specifying size of model required, and much other information useful to inventors, may be had gratis by addressing MUNN & CO., Publishers of the SCIENTIFIC AMERICAN, New York.

1,848.—Calvin Adams, of Pittsburgh, Pa., for an Improvement in Meat Cutters:

I claim the combination of the revolving disk, H, of the cams, j j, and cutters, i i, and openings, k k, arranged with stationary cutters, e e, on disk or casing, A, all substantially as and for the purpose specified.

1,849.—S. R. Andres, of Troy, N. Y., for an Improvement in Articles of Food Made from Beans:

I claim flour, meal, grits grain, or any article made from boiled or otherwise cooked and dissicated beans, manufactured as described or in any equivalent way.

1,850.—Alexander Bain, of New York City, for an Improvement in Telegraphs:

I claim, first, The employment of an acoustic tube, or its equivalent, combined with the armature lever of an electro-magnet, or with any equivalent instrument for producing sounds by electricity, to operate substantially as and for the purpose set forth.

Second, The employment, as stops for the armature lever or other device by whose movement the sound is produced, of collars, w w', or their equivalents, adjustable upon the acoustic tube itself, substantially as specified.

Third, The employment of a cover inclosing the instrument for producing the sounds and the mouth of the acoustic tube, substantially as and for the purpose specified.

1,851.—H. C. W. Batterman, of New York City, for an Improvement in Bird Cages:

I claim, first, The arrangement and combination of the seed cup, C, discharge opening, e, and bowl, D, constructed and operating substantially as and for the purpose shown and described.

Second, The vertically sliding loops, g, or their equivalents, in combination with the protecting case, E, as and for the purpose set forth.

1,852.—L. A. Beardsley, of South Edmeston, N. Y., for an Improved Pulley Block:

I claim extending the sides of the cast wheel frame beyond the edges of the sheave, as described, in combination with ribs, f and e, the whole constructed to operate substantially as described for the purpose set forth.

I also claim, in combination with the cast wheel frame, leaving its edges extended beyond the sheave, as described, a fixed bail of wrought iron, the whole arranged to operate as set forth.

1,853.—J. K. Buck, of Winona, Minn., for an Improvement in Winnowing Machines:

I claim the combination and arrangement of the shaker, Fig. A, the shoe spring, Fig. C, the screen lever, Fig. B. the rake, Fig. D, the drawer, Fig. E, when constructed and operating as and for the purposes specified.

1,854.—Nathan Carr, Jr., and John Carr, of Monmouth, Ill., for an Improvement in Cultivators:

I claim, first, Making the frame in the form of a bow, in combination with supporting it by caster wheels, H H, as shown and described.

Second, In combination with said bow, A, and caster wheels, H H, the hinged plow beams, C C, and tongue, B, arranged in relation to each other, as shown and described.

1,855.—S. W. Chamberlin, of Stoneham, Mass., for an Improvement in Machine for Polishing Shoe and Boot Heels:

I claim the combination of the flange, c, with the polishing wheel, b, when arranged to operate together, as specified.

Also the combined arrangement operating substantially as specified of a sliding and swiveling holding mechanism, with a polishing wheel with or without a flange.

And the combination of springs, or their equivalents, operating substantially as set forth, with a sliding swiveling holding mechanism and a polishing wheel with or without a flange.

1,856.—M. G. Couch, of Odessa, N. Y., for an Improvement in Machines for Raking and Loading Hay:

I claim the endless belt of rakes, when applied to a mounted box, A, and having its rake bars. G', attached loosely to its straps, b b, and provided with rods, e, so arranged in connection with the bottom, b*, of the box, that the rake bars will be retained in proper position while carrying up their loads and allowed to discharge them at the proper point by their own gravity, substantially as set forth.

[The object of this invention is to obtain a simple and efficient machine which may be attached to a cart or wagon, and as the latter is drawn along over the field, serve to take up the hay and discharge the same into the cart or wagon, the device working automatically or by the simple draft movement thereof.]

1,858.—A. H. French, of Pittsfield, Ill., for an Improvement in Water Elevators:

I claim constructing the well buckets with hinged valves, d d', in their bottoms and hooks, g g, on their sides, and combining with said buckets the hinged or swinging troughs, G G', furnished with bails, h h', and lifting pins, k k', all arranged and operating substantially as and for the purposes set forth,

[This invention relates to an improvement in filling and discharging water from well buckets whereby the water is automatically discharged from the buckets when they are drawn up to the desired hight and emptied into a main receiving trough.]

1,859.—Frederick Frickinger, of Schodack, N. Y., for an Improvement in Pianoforte Action:

I claim, first, The combination of the protuberance, d, on the jack, and the notched block, b, attached to the hammer shank, substantially as and for the purpose specified.

Second, the spring, E, applied in connection with the hammer butt, substantially as and for the purpose set forth.

Third, The connection of the jack-spring, h, with a protuberance, f, on the bottom of the tenon of the jack, substantially as and for the purposed described.

[This invention consists in a novel contrivance for arresting the hammer near the string, after the blow, to enable a quick repetition to be effected. It also consists in a spring applied in connection with the hammer for the purpose of relieving the jack and key of such portion of its weight as may be desirable. And it further consists in an improved mode of applying the jack spring.]

1,860.—C. W. Gage, of Homer, N. Y., for an Improved Mode of Attaching Thills to Carriage Axles:

I claim the employment of the jaws, B and C, one of which is movable and both of which are provided with sections of conical journals, when the same are used in the manner and connection represented for the purpose set forth.

1,861.—John Gault, of Boston, Mass., assignor to Wm. A. Moore, of Lowell, Mass., for an Improvement in Coal Hole Covers:

I claim the arrangement of the internal socket, F, thimble, A, movable cover, D, perforated flat bar, E, and pin, G, all constructed and combined in the manner and for the purposes shown and explained.

[The object of this invention is to so arrange a vault cover that it may be elevated above the hole of the vault and retained in a vertical position, so that articles may be thrown into the vault, and the cover at the same time serve as a guard and protector to prevent persons falling through the hole when open, and also serve to prevent the cover being casually removed from the hole.]

1,862.—Loure Green, of Great Bend, Penn., for an Improvement in Plows for Draining and Subsoiling:

I claim the combination of the standard, H H, with the shares, A, B and C, and the flanches, E, f and D D, the whole constructed and arranged substantially as and for the purposes set forth.

1,863.—G. G. Griswold, of Chester, Conn., for an Improvement in Skates:

I claim the arrangement of the bar, B, with the grooved skate stock, A, and runner, C, in the manner and for the purpose shown and described.

[This invention is an improvement in the common wooden stock skates, and the object of the invention is to secure the skate irons to the stocks of such skates in a more rigid and permanent manner, and also to prevent the stocks from splitting longitudinally, which frequently occurs with the wooden stocked skates hitherto made.]

1,864.—H. Hagans, of Brandonville, Va., for an Improved Churn:

I claim the arrangement of the self-adjusting rotary butter gatherer, G, and ribs, c, with the dasher rod, E, and wings, F, in the manner and for the purpose shown and described.

[This invention consists in the combination of a self-adjusting or floating butter gatherer, in churns, with a rotating hollow dasher staff and radial blades or wings; and in the employment of a vibrating hand lever and counter bar.]

1,865.—Wm. Hanlon, of Philadelphia, Pa., for an Improvement in Cricket Wickets:

I claim the construction of wicket stumps with spring joints, substantially as and for the purpose set forth.

Second, The attachment of the bails to one or more of the stumps by chains or cords, substantially as and for the purpose specified.

Third, The adjustable bail supporters, fitted to the heads of the stumps, substantially as and for the purpose described.

[An engraving of this invention appeared in our last number.]

1,866.—John Hoyt, of Cleveland, Ohio, for an Improvement in Machines for Drying Paper:

I claim, first, Steam heated cylinders with non-metallic guards, arranged as described, in combination with the stationary tubular heaters, B, and non-metallic rollers, C, substantially as described.

Second, I also claim the use of non-metallic guards when placed around close steam cylinders, substantially as described and for the purpose set forth.

1,867.—R. G. Hunt, of New York City, for an Improved Machines for Slotting Gas Sieves:

I claim the pyramidically toothed cutter with cutting edges alternately on opposite sides of the teeth, substantially as described, in combination with a yielding hinged bed or table, substantially as described.

Also, I claim the hinged bed, in combination with a spring or equivalent, substantially as described.

1,868.—J.P. James, of Pepin, Minn., for an Improved Grab or Self-closing Hook:

I claim the arrangement of the spring catch, C, in combination with the outwardly opening hinged latch, B, and hook, A, all constructed and operating in the manner and for the purpose shown and described.

[This invention consists in the arrangement of a spring catch in combination with a latch which is hinged to the shank of the hook, and which closes down upon its point from the outside in such a manner that when the latch is opened by forcing back the spring catch, a line or rope may be readily introduced into or taken out of the hook, and that the latch is closed automatically by coming in contact with a stone or other resisting body, and when closed it is firmly retained by the catch.]

1,869.—J. W. Jarboe and A. Mackey, of New York City for an Improvement in Drip Pot for Sugar Molds:

We claim the construction of the drip pot with its top, C, composed of a single piece of sheet iron, and its neck, D, composed of a ring of malleable iron, said top and neck being combined substantially as specified.

[The object desired to be attained by this invention is to make the top and neck of the drip pot stronger and more durable than either the cast iron or the sheet iron ones commonly adopted, in both of which the neck is very liable to be split by the powerful wedge-like action produced by the conical tips of the molds when filled with sugar.]

1,870.—J. S. Jenness, of Bangor, Maine, for an Improved Electro Magnet:

I claim constructing the core of electro-magnets of a bundle of single wires and placing said bundle of single wires in a tube, and bending the tubes and wires while hot into a U-shaped magnet, as described and for the purposes set forth.

1,871.—Cecil G. Johnson, of London, England, for an Improvement in Boots and Shoes. Patented in England April 2. 1860:

I claim as a new article of manufacture a boot or shoe made as described.

1,872.—E. A. Kelsey, of Meriden, Conn., for an Improvement in Coffee and Tea Pots:

I claim a coffee or tea pot constructed of tinned plate with a nozzle or spout, D, of the same material, swaged or struck up in proper form by means of dies, substantially as set forth.

1,874.—G. Kober, of New York City, for an Improvement in Water Meters:

I claim the downward extension of the spiral blades, k k, from the exterior periphery of the rising and falling cylindrical hub, d, below the bottom thereof, as shown at i i, in combination with an annular seat, j j, of smaller diameter than the said hub, substantially as and for the purpose set forth.

1,875.—Benjamin Lambert, of Surrey County, England, for an Improvement in the Treatment of Printed Paper to Remove Ink and Recover the Pulp. Patented in England, July 6, 1861:

I claim my improved process substantially as described for treating printed paper in order to remove its ink and convert such paper into pulp fit to be re-made into paper.

1,876.—H. Lawrence and C. H. White, of Melrose, N. Y., for an Improved Lock for the Nuts of Railroad Bolts:

I claim the washers, G G G, having annular ratchet-teeth flanges, a, formed on them in combination with the springs or pawls, g, which are secured to the nuts, D, substantially as and for the purposes set forth.

[The object of this invention is to prevent the nuts and bolts which are used to secure strengthening bars on each side of the joints of railroad rails, from wearing loose, in consequence of the jaring and consequence of the passing and re-passing of trains over the rail.]

1,877.—D. W. Lavis, of Janesville, Wis., for an Improvement in Pumps:

I claim, first, The peculiar combination of the piston, L, and piston-barrel, E, with the equalizing bar or lever-guage, G, and the balancing rods, P O, substantially as and for the purpose set forth and described.

Second, The oscillating fulcrum bar, R, combined with the lever or handle, S, and the balancing rods, P O, and the movable case, C, substantially as shown and described.

1,878.—R. M. Marshall, of Dayton, Ohio, for an Improvement in Machines for Rolling Candy:

I claim the cutting and impressing of sticks of candy from a sheet of candy dough or paste, by an arrangement of rollers constructed and operating substantially as described and represented.

1,879.—A. P. Merrill, of Ypsilanti, Mich., for an Improvement in Grain Separators:

I claim arranging the reels, D D D, the endless grain-carrier, the rake, 2, the sieve, T, and the screen conveyers, V, together in the manner herein represented, when the several parts are connected and made to operate as specified.

1,880.—Charles Mettam, of New York City, for an Improved Camp Cot:

I claim, first, The construction of portable camp cots, the same consisting of sectional side-rails united longitudinally by means of metallic sockets or sleeve-joints in combination with removable and jointed cross-legs, and detachable canvas, the whole being arranged substantially as described.

Second, The method of scarping or dove-tailing and mortising the contiguous ends of the side-rail sections, so that while capable of being firmly joined and secured in a longitudinal direction they shall admit of the legs being inserted for the double purpose of locking the joint of the rail section, and of being fixed thereto as described.

Third, The combination of the slot and pin in the socket and rail section respectively, or of any other locking or holding device with the metallic socket, whereby the said socket is capable of sliding motion, while being held on to either end of the rail section, substantially as shown and described.

Fourth, In combination with the longitudinally divided sectional side rails. I claim the metallic sleeve or socket.

Fifth, The use, in combination with the rails and legs of cots constructed as described, of a canvas provided with a sleeve on the rail-side thereof and slits corresponding to the legs, as set forth.

Sixth, Providing the canvas when strapped, or when, by sleeve or otherwise, equivalently attached transversely to the side-rails with end straps, or their equivalent, so arranged that the canvas may be stretched longitudinally, substantially as described.

Seventh, The method and manner, herein described, of bracing the cross-legs of a camp cot by means of cords, or their equivalents, so that perfect rigidity of the cot may be obtained, without sensibly increasing the weight thereof.

Eighth, Forming the side-rails of sections of suitable number and length, and uniting the same by means of a metal socket forming the head of a corresponding leg, substantially as described.

1,881.—S. M. Mott, of Wellsville, N. Y., for an Improvement in the Manufacture of Lubricating Oils:

I claim the within-described method of preparing lubricating oil from crude rock or mineral oil by subjecting it to the action of steam, combined with the chemicals within described in the manner set forth.

1,882.—Wm. T. Nicholson, of Providence, R. I., for an Improved Egg-Beater:

I claim the reciprocating beaters, K K, or their equivalents, when combined with a revolving beater, G G, or its equivalent, substantially as described for the purpose specified.

1,883.—Wm. Palmer, of New York City, for an Improvement in Breech-Loading Firearms:

I claim the four-faced mortice, i k l p, in the rear of the sliding and turning breech, d, in combination with the cam, h, the parts acting in the manner and for the purposes specified.

I also claim the cartridge, n, provided with the grease, 4, in front of and surrounding the ball, in combination with the said turning and sliding breech, for the purpose and as specified.

1,884.—Edwin Parks, of Winchendon, Mass., for an Improvement in Faucets:

I claim the bit, c, in combination with the chamber, d, as applied to a faucet for the purpose described.

1,885.—William Pitt, of Ithaca, N. Y., for an Improvement in Lamps:

I claim the supplemental wick tubes, F G, applied to the wick tube, B, as shown, in combination with the flame-divider, H, attached to the cone or deflector, E, relatively with the tube, F, as shown, and all arranged as and for the purpose set forth.

[The object of this invention is to obtain a lamp for burning coal oil, with a good illuminating flame, without the usual glass chimney. The invention consists in the employment or use of supplemental wick tubes applied to the wick tube proper, and used in connection with a flame-divider applied to the cone or deflector. All being arranged to effect the desired end.]

1,886.—L. L. Pollard, of Worcester, Mass., for an Improved Auger Handle:

I claim the socket, or frame, F, the catch, or dog, C, the thumb-piece, or key, D, or their equivalent, in combination with the spiral-spring, E, the handle, A, and the pin, or rivet, G.

1,887.—M. L. Powell, of New Castle, Ind., for an Improved Burglars' Alarm:

I claim, first, The arrangement of the cord, k, passing through loops, l m n o, and connecting with the hinged-dog, G, which retains the tilting frame, A, of the bedstead substantially as and for the purpose shown and described.

Second, The arrangement of the weight, K, in combination with the cord, k, as and for the purpose specified.

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1,888.—Thomas Rainey, of New York City, for an Improved Car Seat :

I claim the connecting, substantially as described, of the radius bars, H H, of the seat-back, to the rocking seat, B, so as to admit of the automatic adjustment of the seat, with the reversing movement of the *back*, as set forth.

[This invention consists in connecting the seat-back to the seat in such a manner that the seat will be shitted or inclined with the reversing of the back. The whole forming an exceedingly simple and efficient device. Patents have also been taken in England, France and Belgium.]

1,889.—Joshua Regester, of Baltimore, Md., for an Improvement in Street Washers :

I claim a metallic casing, A, constructed as described, provided with F F and E, as bearings, when employed and combined with a stopcock, D, and rod, or tube, B, all operating in the manner and for the purposes substantially as set forth in the foregoing specification.

1,890.—S. M. Rounds, of Somerset, Mass., for an Improved Extension Table :

I caim the combination of the beds, A, which are supported by the legs, B, folding-leaves, F, and hinged bars, D, or their equivalents, arranged substantially as and for the purpose set forth.

1,891.—C. D. Schubarth, of Providence, R. I., for an Improvement in Breech-Loading Firearms :

I claim the combined guard and lever, F, pivoted so as to move in a vertical plane, and acting in connection with the sliding-key, E, to secure or release the pivoted stock, A, as set forth.

1,892.—Jacob Seebold, of New Berlin, Pa., for an Improvement in Grain Thrashing and Separating Machines :

I claim, first, The cast-iron frame, B b b′, constructed as shown and described, and employed in connection with the cylinder, A, rocking-frame, F F′ G, and crank-wheel, H, of a thrashing machine, in the manner and for the purposes explained.

Second, The combination of the arms, E F′, stud-shafts, f, and movable boxes, f′, all constructed, arranged and employed in the manner shown and explained for the purpose of readily connecting or disconnecting the shaking shoe and thrashing apparatus.

1,893.—S. B. Sexton, of Baltimore, Md., for an Improved Hot-Air Register :

In combination with the hinged front plate, I claim a register-valve, constructed and operated substantially as described, whereby access to the flue-pipe may be had for its adjustment, or for other purposes, without necessitating the removal of the register-box, as set forth.

1,894.—George Seymour, of Cedar Rapids, Iowa, for an Improvement in Machines for Shelling and Grinding Corn :

I claim, first, The arrangement of a series of slats, A, attached by means of lugs, a, to adjustable platforms, B, and acted upon by means of springs, f, in combination with the shelling cone, D; the whole being constructed and operating as and for the purpose described.

Second, The arrangement and combination of the hollow shelling cone, D, solid adjustable grinding cone, J, grinding surfaces, o o′, hollow shaft, g, vertical arbor, j, and bevel-wheels, h h′; all constructed and operating substantially as and for the purpose specified.

[This invention consists in the arrangement of a series of adjustable yielding slats, with teeth and spiral ridges placed side by side in an upright position so as to form a conical shell, in combination with a rotary toothed cone in such a manner that said slats adapt themselves readily to ears of different size, and the ears are perfectly shelled from beginning to end; also in arranging in the interior of the hollow shelling cone a solid vertically adjustable grinding cone, to which a rotary motion, in a direction opposite to the motion of the shelling cone, can be imparted, and which operates in combination with a grinding surface on the inside and on the bottom of the hollow shelling cone, in such a manner that the corn, or other substance which may be introduced between said grinding surfaces, is speedily reduced to flour or meal of any desired fineness.]

1,895.—Christian Sharps, of Philadelphia, Pa., for an Improvement in Adjustable Back Sights for Firearms :

I claim the movable arm, D, with its notched projection, G, and sliding plate, E, in combination with the notched flanges, B and B′, the whole being constructed and operating substantially as and for the purpose set forth.

1,896.—Newman Silverthorn, of Prescott, Wis., for an Improvement in Stoves :

I claim the casting, or removal of that portion of the top of stoves, directly or not directly over the fire, off in a slide, whether parallel to or at any angle to the length to the fire-chamber, for the purpose of more conveniently building or relighting fires, putting in longer, larger or rougher wood, coal, chips or any other fuel, more conveniently than can now be done, through the door or top, without the removal of pots, lids or middle section, as is now often done for the adding of fuel, &c., substantially in the manner and for the purpose set forth.

1,897.—Frederick Simon, of New York City, for an Improvement in Methods of Giving Smooth Surfaces to Hard Rubber in the Mold :

I claim the method, hereinbefore described, of giving smooth surfaces to articles of india rubber, or gutta percha, intended to be molded or enveloped in metal plates, by coating them, prior to being included in the metallic plates, with a solution of rubber and turpentine, substantially as set forth.

1,898.—George Smith, of New York City, for an Improved Knife Cleaner :

I claim the combination of the box, A, rubber, B, and lever, D, arranged for joint operation as and for the purpose set forth.

[The object of this invention is to attain, a simple, efficient and economical device for scouring or cleaning knives, one that will be of quite moderate dimensions and readily adjusted to any suitable fixture for use.]

1,899.—C. F. Spaulding, of St. Johnsbury, Vt., for an Improved Milk Pan :

I claim, as an improved article of manufacture, my improved pan as made with an annular depression or air chamber, B, in its bottom, the same being in the manner and for the purpose set forth.

1,900.—H. D. Stover, of New York City, for an Improvement in Planing Machines :

I claim constructing the bed piece in sections of tubes or solid pieces, to be lengthened or shortened conveniently, in order that a bed piece usually employed for dressing short pieces, and occupying but little room, may be quickly lengthened and adapted to dress long pieces also.

I also claim providing the movable platen with securing clamps, operated substantially as described, between which the piece to be dressed, whether warped or twisted, is readily and easily secured to the platen, and firmly held without bending out the warps or twist, and without the necessity of blocking up, so that the cutters will dress the piece straight and out of wind, as set forth.

I also claim the arrangement of matching cutters, to be adjusted both laterally with each other and vertically upon the bed piece, essentially as described, in combination with the platen, so that the planing and matching of the piece may both proceed at the same time, or either the planing or matching may be done separately, whether the platen be made movable with the piece secured thereupon, or the platen be fixed and the piece be made to move thereon.

I also claim the arrangement of the gearing for driving the feeding rolls, so that cogwheels of greater diameter than the rolls can be mounted on their shafts, and, at the same time, admit of adjusting the distance between the two rollers to suit any varying thickness of lumber to be planed, which arrangement consists in placing the two wheels on the shafts of the rollers in two separate and parallel planes, so that one will pass by the other, in combination with the elbow frame in which the shafts of the connecting pinions is mounted, and a series of radial moving arms by which the shafts of the said wheels are connected with their pinions, and the two sets of pinions with each other, substantially as and for the purposes specified.

I also claim so arranging the cutting cylinder that its lower portion may be dressing a board or piece, and, at the same time, the upper or other portion of the cylinder may dress another piece, substantially as described, in combination with feed rolls and movable platen, for feeding the material to the cylinder at different points of its periphery, substantially as set forth.

I also claim sliding the feed rolls into and out of position to connect them for use with the fixed bed piece and cutting cylinder, and remove them when the movable bed is used by means of the crossways, substantially as described.

I also claim the pressure plate above the cylinder and the table below, between which the board or lumber, even if exceedingly thin, may be fed to the planing cylinder, in combination with the planing cylinder, for the purpose and in the manner substantially as set forth.

I also claim the manner of connecting the uprights of the frontal plate with the bed piece, in combination with the diagonal tubes or rods, F, which are threaded to the uprights with right-hand screws, and also threaded with left-hand screws to the bed piece, substantially as described, so that, by turning the screws, the face of the upright may be adjusted in position, substantially as described.

I also claim, in combination with the framework of a planing or other machine, a safe or other suitable case for the preservation or safe-keeping of the tools or other valuable appurtenances belonging to the machines, as described.

1,901.—D. B. Waite, of Providence, R. I., for an Improvement in Making Watch and Locket Rims :

I claim, first, The combined hollow cutting former, B, and die, m, in combination with the spring piston, n, and combined cutting die, E, and fixed former, d, as described, for the purpose specified.

Second, I claim the hollow cutting former, G, in combination with the spring piston, n, and combined forming die, F, and fixed former, d, and a sliding collar, i, substantially as described and for the purpose specified.

Third, I claim the sliding clearer, D, in combination with a detachable ring, O, substantially as described, for the purpose specified.

Fourth, I claim the hollow cutting former, C, in combination with the spring piston, n, and combined forming die, F, and fixed former, d, and the sliding collar, j, substantially as described, for the purpose specified.

1,902.—Joseph Thomas, of New York City, for an Improvement in Lamps :

I claim supporting the heating and deflecting piece, F G, upon the casing, J, which latter is interposed between the heating and deflecting piece, F G, and the wick tube, C, and so arranged as to retard the transmission of heat to the latter, substantially as set forth.

I also claim, in connection with the above, allowing a portion of the air which passes between the heating and deflecting plates, F G, to first pass between the casing, J, and the wick tube, C, substantially as and for the purpose set forth.

1,903.—C. D. Van Allen, of Syracuse, N. Y., for an Improvement in Churns :

I claim the combination of the perforated adjustable slide, I, with the perforated dasher, G, substantially as described.

1,904.—J. De L. Watkins and R. Bryson, of Schenectady, N. Y., for an Improvement in Mowing Machines :

We claim the combination and arrangement of the large driving wheel, A, with slotted hub, m, large spur wheel, J, with bevel notches, o, in one end of its hub, angular catches, d d d i, spiral springs, g g, and pivoted hooks, c c, the whole constructed and operating together in the manner and for the purpose described.

1,905.—M. F. Williamson and J. J. Swigert, of Hyattsville, Ohio, for an Improvement in Corn Shellers and Cleaners :

We claim the arrangement of the endless feeding apron, B, hopper, B2, spirally-ribbed concave, C, shelling bars, d, and spirally-spiked shelling cylinder, F, with the moving riddle, G, fan, L, and boards or box, I, as shown and described, the parts being constructed and operating together in the manner set forth.

[This invention relates to an improvement in machines for shelling corn from the cobs, and afterward cleaning the shelled corn by blowing off the bran, &c.]

1,906.—F. C. Coppage, of Terre Haute, Ind., assignor to J. R. Osgood, S. F. Smith and Samuel Allamon, of Indianapolis, Ind., for an Improved Machine for Turning Plow Handles :

I claim the plate pulley, B, bits, E E, hollow journal piece, C, bearing and supporting plate, A, anti-friction washers, f g h, and disk, D, when constructed and arranged substantially as shown and described, and operated for the purpose set forth.

1,907.—H. T. Crocker (assignor to himself and W. H. Barns), of New London, Conn., for an Improved Steam Pressure Gage :

I claim the combination of the curved elastic bar, G, flanged ring, C, and angular piece, I, with the diaphragm, B, and disk or arm, J, in the manner shown and described.

[This invention relates to that kind of gage known as the "metallic diaphragm gage," and it consists in certain novel means through which the diaphragm acts upon the index to make it show upon the dial the pressure of steam or other fluid.]

1,908.—John Fowler, Jr., of Cornhill, County of Middlesex, Robert Burton, of Kingsland, County of Middlesex, David Greig, of New Cross, County of Kent, and Jeremiah Head, of Newcastle-on-Tyne, England, assignors to Wm. P. Tatham, of Philadelphia, Pa., for an Improvement in Drums or Pulleys to Prevent Ropes from Slipping in Machinery for Plowing and Tilling Land by Steam. Patented in England Jan. 24, 1859 :

We claim the mounting on a hauling or winding drum, a series of levers or instruments on axes or centers, in such a manner that the motion of the levers or instruments caused by the strain or pressure of the rope will nip the rope, substantially as described.

1,909.—B. Haworth (assignor to himself and B. F. Canaday), of Ridge Farm, Ill., for an Improved Joiner's Bench Vise :

I claim having the foot brace, F, and screw, G, of the vise passing through the slotted leg, B, of the bench, the screw working in the bar, H, and the latter resting on or fitted over the foot brace, when said parts are used in connection with a lever, K, and a guide, E, or their equivalents, and all arranged and applied to a joiner's bench to operate as and for the purpose set forth.

[The object of this invention is to attach an ordinary bench vise to the bench in such a manner that its jaws may be elevated above the top of the bench when necessary, or thus required for use, and also lowered so that the jaws may be out of the way and below the upper surface of the bench, leaving the latter wholly unobstructed, when required.]

1,910.—H. Ormsby and E. R. Sumner (assignors to themselves and J. A. Carpenter), of Beloit, Wis., for an Improvement in Cob and Feed Mills :

We claim, in combination with the dome, B, and concave, E, rotated in opposite directions and relatively adjustable, the grinding surfaces, f and g, and the crushing device, d, formed of vertically-projecting segmental ribs with horizontal teeth, the whole arranged and operating as described, for the purpose set forth.

1,911.—G. S. Reynolds (assignor to himself, James Brown and J. M. Whitney), of Tunbridge, Vt., for an Improvement in Harvesters :

I claim the combination of the rotary toothed cutters, C, horizontal train of gearing, d, fingers, B, small guards, B′, and stationary cutters, E, with the bar, A, all constructed, arranged and operating substantially in the manner and for the purposes shown and explained.

[This invention relates to an improved cutting device for harvesters of that class in which rotary cutters are used. The invention consists in combining a series of rotating cutters with stationary fingers and stationary cutters, the parts being so arranged as to insure an easy cutting operation, without the liability of choking and clogging.]

1,912.—Wm. H. Richards, of Newton, Mass., assignor to C. T. Babcock, of Boston, Mass., for an Improved Combined Knife, Fork and Spoon :

I claim the described combined knife, fork and spoon, for camp purposes, when such are constructed and arranged in the manner set forth.

1,913.—Wm. J. Stevens, of New York City, assignor to himself and N. W. Condict, Jr., of Jersey City, N. J., for an Improvement in the Means of Operating Valves of Steam Engines :

I claim the arrangement of the secondary and main valves, side by side in the same chest, and in direct connection with the same operating rod, the said rod having attached to it the pistons for completing the movements of the main valve, and having a lost motion with respect to the main valve, but none with respect to the secondary valve, all substantially as specified.

And I also claim the crank, K, and forked lever, N, applied substantially as described, in combination with each other and with the valve rod and main piston rod, for the purposes set forth.

1,914.—L. J. Worden and A. Leach (assignors to themselves and D. S. Heffron), of Utica, N. Y., for an Improvement in Lamps :

We claim the combination of the concentric annular passages, e and b, air chamber, d, and perforated shell, D, all constructed and arranged as shown and described, and operating to protect the flame from lateral currents of air and equalize the draft, as explained.

[The object of this invention is to obtain a lamp for burning coal oil in railroad cars, and other places where lamps are subjected to a jostling or vibratory movement.]

1,915.—Wm. Wells. of Harrisburgh, Pa., assignor to himself, T. C. McDowell, of same place, and A. B. Little, of Washington, D. C., for an Improved Cot or Bedstead :

I claim, first, Hinging the head and foot frames, D and E, to the block, C, and regulating their elevation by means of the springs, c c, and the straps and buckles, d d, substantially in the manner and for the purpose described.

Second, Counter-sinking the upper surface of the frame, A, and the under surfaces of the frames, D and E, so that thereby the springs may be wholly imbedded when the frames are brought close together by means of the straps and buckles, d d, as and for the purpose set forth.

1,916.—John Wyberd (assignor to F. S. Littlejohn), of New York City, for an Improved Mode of Operating Slats or Blinds :

I claim the curved springs, c c c c, loops, d d d d, eyelets, e e e e, arranged and operated in combination with the levers, B B B B, and spring, S, in the manner and for the purpose substantially as described and shown in the drawings.

1,917.—Hiram Stanhope, of Philadelphia, Pa., for an Improvement in Breech-loading Ordnance :

I claim the combination of the eccentric, B, the breech piece, A, the links, N N, and the levers, D D, when arranged and connected together substantially as described.

RE-ISSUES.

109.—Jefferson Nash (assignor to himself and A. K. Cutts), of Janesville, Wis., for an Improvement in Grain Separators. Patented Sept. 27, 1859 :

I claim, first, The arrangement and combination of a vibrating lever, E, the elbow crank, f, and the rods, e and h, whereby the motion of the shoe can be changed from a longitudinal to a transverse direction, and vice versa, substantially as described.

Second, Making a grain separator with apertures in its sides or casing, L, through which to allow the shoe, M, to vibrate, substantially as and for the purpose described.

Third, Giving a lateral body motion of the entire shoe, M, when constructed substantially as described, in combination with a longitudinal motion of a screen, H, substantially as and for the purposes described.

Fourth, Finally I claim the rod, k, in combination with sieve or screen, H, and step, l, for the purpose of giving a jog or slight up and down motion as the separator is operated, substantially as described.

DESIGNS.

90.—Andrew Dougherty, of Brooklyn, N. Y., for a Design for Cards :

91.—D. M. Scypes and S. Smith (assignors to Smith, Francis & Wells), of Springville, Pa., for a Design for a Cook's Stove.

92.—D. M. Scypes and Samuel Smith (assignors to Smith, Francis & Wells), of Springville, Pa., for a Design for a Summer Range.

LIST OF CLAIMS FOR THE WEEK ENDING JULY 30, 1861.

1,918.—Samuel Nowlan, of New York City, for an Improvement in Washing Machines :

I claim, first, Providing the tub or case of Washing Machines with inner perforated side walls and bottom, arranged in relation to the outer walls and bottom, substantially as shown and described.

Second, The combination with the outer and inner perforated side walls and bottom of a second bottom, formed in two parts, each being hinged to opposite side walls and both united at the center by a toggle joint, and of a suitable mechanism to impart to the said bottom the motion or motions, as set forth.

1,919.—John A. Partridge, of New York City, for an Improvement in Spinning Machinery :

I claim making the endless band, E, adjustable toward and from the front and back drawing rollers, substantially as and for the purpose specified.

Also, The combination of the laterally adjustable band, E, with the adjustable rollers, C C′, in the manner shown and described.

[This invention consists in making the back drawing rollers adjustable nearer to and further from the front drawing rollers to accommodate wool of shorter or longer staple. It also relates to the use of a moving endless band for producing direct or counter twist in the roping between the front and back drawing rollers during the drawing operation, and consists in making such band adjustable relatively to the front and back drawing rollers for the purpose of adjusting the countertwist to various lengths of staple.]

1,920.—W. P. Penn, of Belleville, Ill., for an Improvement in Seeding Plows :

I claim the gang plow frame, D E F, with the hopper, I, arranged thereon, standard, P, lever, R, and shaft, S, in combination with the transverse slides, m, and rods, n, by means of which the flow of seed from the hopper is stopped by the elevation of the gang of plows, as described.

1,921.—Charles Raymond, of Brattleboro', Vt., for an Improvement in Sewing Machines :

I claim, first, Securing the pin, c, on which the looper plate, N, oscillates, and the fixed pin, h, to which the bridle rod, g, is attached, to a socket, P, which is adjustable as and for the purpose specified.

Second, The bracket, d, constructed with a flat inner face, and applied in combination with the plate, N, the looper pin, b, and the looper, M, substantially as and for the purpose specified.

[This invention consists in a certain novel mode of applying and operating a looper in a single thread sewing machine for the production of the chain stitch; also, in certain means of adjusting the so applied looper for correct operation in combination with the needle; and further in a novel clamping device operating to load the needle thread spool during a portion of the descent of the needle for the purpose of insuring the old loops being drawn up out of the way of the looper as the latter advances to commence the opening of a new loop.]

1,922.—George Rinewalt, Jr., of Pendleton, Ind., for an Improved Wood Planing Machine :

I claim the reciprocating planer, I, placed in an adjustable frame, E, in connection with the feed mechanism of carriage, J, comprised of the eccentric, R, fitted in a yoke, f, of a bar, S, and the bar connected to a lever, O, which has a pawl, P, that engages with the ratchet, N, of shaft, M, the latter having a pinion, L, that gears into the rack, K, of carriage, J, all arranged for joint operation substantially as and for the purpose set forth.

[This invention relates to a planing machine which is more especially designed for manual operation, and consists in the employment or use

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of an adjustable reciprocating planer in connection with a feed mechanism, whereby a very simple and efficient machine is obtained for the desired purpose.]

1,923.—Christian Sholl, of Mount Joy, Pa., for an Improvement in Butt Hinges:

I claim as a new article of manufacture the hinge composed of the two parts, A B, arranged and operating substantially as specified.

1,924.—James Spear, of Philadelpeia, Pa., for an Improved Fire Board Stove;

I claim the combination of the register, B, and top plate, A, of a fire-board stove, when used in connection with the body of the stove, C, and fire-board, D' D', constructed for the purpose described.

1,925.—Anton Spellerberg, of Philadelphia, Pa., for an Improvement in Breech-Loading Fire Arms:

I claim the combination of the barrel, A, stationary breech. B, projecting bar, D, and spring catch, E, with a lock of substantially the construction described and a downwardly projecting hammer, G, the whole arranged and operating in the manner and for the purpose explained.

1,926.—U. B. Vidal, of Philadelphia, Pa., for an Improvement in Lamps:

I claim the handle, H, corrugated or roughened bottom, e, expanded wick top, F', and sliding tube, D, with flame spreader, F, attached, all being arranged as shown, to form a new article of manufacture, for the purpose specified.

[The object of this invention is to prevent the danger attending the use of portable or hand lamps, in which volatile hydro-carbons are burned for illuminating purposes. The invention also has for its object the ready volatilizing of the fluid, and a free supply of gas to the illuminating flame.]

1,927.—W. Wadleigh and N. F. Morrill, of Sanbornton Bridge, N. H., for an Improved Machine for Turning Tapering Forms:

I claim the obliquely arranged cutter slide, C, combined with the hollow mandrel, B, by means of a movable collar, b, and two fast collars, a a, or equivalent guides outside of the mandrel, and controlled by a pattern wheel, I, on a separate shaft, L, applied substantially as described, the whole operating substantially as set forth.

[This invention relates to machines in which cutters attached to a hollow mandrel revolve around the work while the latter moves longitudinally through the interior of the mandrel. It consists in a mode of making the cutters adjustable obliquely to the axis of their mandrel under the control of a pattern wheel.]

1,928.—Alexander Warner, of Brooklyn, N. Y., for an Improved Washing Knuckle:

I claim a stock or hand piece provided with rollers of cylindrical or conical form, arranged as shown, to operate as and for the purpose set forth.

[The object of this invention is to obtain a simple and efficient device to facilitate and lessen the labor of washing clothes by hand. Said device being a substitute for the knuckles hitherto employed for rubbing and pressing the clothes on the washboard.]

1,929.—A.L. Weymouth, of Boston, Mass., for an Improved Bridle Bit:

I claim the employment or use of an expanding bit, arranged or provided with a rack, pawl and a spring or springs, to operate as and for the purpose set forth.

[The object of this invention is to obtain a bit by which perfect control may be had over vicious horses, and to this end the bit is constructed in such a manner that it will expand in the mouth of the horse and keep the mouth in a distended or open state, so that the animal cannot grasp with his teeth the ordinary bridle bit and render the same inoperative or powerless.]

1,930.—A. White, of Geneseo, Ill., for an Improvement in Governor Valves for Steam Engines:

I claim the mode of constructing the valve and valve chamber as described, so as to admit the steam from both sides for the purpose of equalizing the pressure and balancing the valve.

1,931.—F. G. Wilson, of Ontario, Canada West, for an Improvement in Hay Rakes:

I claim the slotted levers, T, bolted to the head and slide, so as to limit and govern the movements of the slide with the draft ropes, U, attached so as to be adjustable, the whole operating conjointly and in combination with the head, A, teeth, B, slide, E, and handles, C, in the manner and for the purpose set forth and described.

1,932.—J. R. Whittemore, of Chicopee Falls, Mass., for an Improvement in Adjusting Knife of Feed Cutters:

I claim the screws, b b b b, when applied and operating substantially in the manner and for the purpose described.

1,933.—Wm. Douglass, of Westport, Mo., for an Improvement in Hand Corn Planters:

I claim the forked distributing tubes formed of blades, A B, and a flexible material, d, as described, in combination with the double discharging seed slide, g, and box, G, all arranged and operating in the manner set forth.

[This invention is an improved hand seed planter, it being an improvement on the patent granted in 1855, wherein the seed is all discharged through one opening from a hopper by means of a common perforated slide and two hinged blades or openers.]

1,934.—G. W. Dyer, of Derby, Conn., for an Improvement in Skates:

I claim the combination with the stock of the two adjustable runner bars, B and C, with their lower edges beveled, as specified, the whole arranged and operating as described for the purpose set forth.

1,935.—John Fowler and W. L. Walter, of Homer, N. Y., for an Improvement in Churns:

I claim the arrangement of the sliding or adjustable bar, G, with the wheel, H, attached and arranged in relation with the pinions, D d, of the shaft, B, and disk, b, to operate as and for the purpose set forth.

1,936.—A. C. Funston, of Philadelphia, Pa., for a Slate Pencil Sharpener:

I claim, first, The bent plate, A, with the opening in the bent portion of the blocks, B B, each block having a tapering recess and cutting edges, x x, the whole being arranged and operating substantially as set forth.

Second, In combination with the bent plate, A, and its blocks, B B, I claim the wings, a a, arranged as set forth for the purpose specified.

1,937.—W. J. Gaskill, of Apalachin, N. Y., for an Improved Device for Adjusting the Rakes of Muley Saws:

I claim the eccentric guide, F, employed in connection with the castings or clamps, B B, to adjust the rake of the saw, as explained.

[The object of this invention is to obtain a simple and efficient means for hanging the saw, whereby the same may be guided and made to operate perfectly true without any tremor or vibration, and due provision made for all looseness occasioned by wear, and also for a necessary adjustment to vary the rake of the saw as occasion may require.]

1,938.—Thomas Griffin, of Roxbury, Mass., for an Improvement in Flower Pots:

I claim the flower-pot, A, constructed with a vertical tube or tubes, B, on its inner circumference, in combination with an annular secondary bottom, C, which is constructed with a perforated tubular extension, D; all in the manner and for the purpose described.

1,939.—James Higgins, of Chicago, Ill., for an Improved Musquito Bar Frame:

I claim the combination and arrangement of the main frame with the two wing frames and the top and tent frames, substantially as and for the purposes specified.

1,940.—Joseph M. Hoadley, of Derby, Conn., for an Improvement in Skates:

I claim the combination with a stock, A, of an adjustable spring runner, B; the whole arranged and operating as described for the purpose set forth.

I also claim the combined arrangement of the cross-ties, d d, with stock, A, stands, e e, and screws, g, the whole operating together in the manner and for the purposes described.

1,941.—Jerome N. Hodge, of North White Creek, N. Y., for an Improved Machine for Sawing and Cutting Wood:

I claim, in combination with the gate, J, the saw, L, and knife, M, constructed and operated substantially as described.

1,942.—D. A. Johnson, of Chelsea, Mass., for an Improved Mode of Securing the Spokes in the Fellies of Wheels:

I claim as new in coupling spokes to the fellies of wheels at or near the joints thereof so as to support the same by means of the spoke and a metallic band as described, constructing said band with apertures through the inner and outer sides thereof, in the manner and operating as specified.

1,943.—Charles Kieser, of Baltimore, Md., for an Improved Machine for Bending Fifth Wheels for Wagons:

I claim, first, The combination of the movable pattern, D, convex-plate, B, clamping-plate, C, tapering shaft, E, and sliding clamp, L, all constructed and operating in the manner and for the purposes explained.

Second, The combination of the hinged tapering lever, G c, stud shaft, E, and adjustable set, H, constructed and operating substantially as and for the purposes set forth.

1,944.—Joseph Klepper, of Wooster, Ohio, for an Improved Tire Bending Machine:

I claim the combination of the bottom frame piece, F, and the standards, E E', provided with holes, x x, and adjustable pin, g, when used in connection with the free lever, A, constructed as described and provided with the loop, D, and set screw, e, the several parts being connected and operating in the manner set forth.

1,945.—Edward Lindner of New York City, for an Improved Mode of Preparing Projectiles for Ordnance:

I claim, first, The method, substantially as described, of applying the malleable envelope or packing, first by casting it around and against the annular cavity in the body of the projectile, and then expanding it by atmospheric or other pressure against the sides or interior surface of a finishing or forming mould or box.

Second, The method of securing the knit sleeve in or around the body of the projectile, substantially as described.

1,946.—Robert Matcher, of New York City, for an Apparatus for Laying Metal Leaf on Moldings, &c.:

I claim laying metal leaf on moldings, or other like surfaces, by means of two rollers, or their equivalents, having a mode of operation substantially such as described, for rolling up the opposite ends of the metal leaf, laying the hanging and unrolled portion thereof on to the molding, and then unrolling the ends in opposite directions, as set forth.

1,947.—Joshua Merrill, of Boston, Mass., for an Improvement in Casing of Stills:

First, I claim encasing a still, substantially in the manner described, so as to surround the sides of the still with a confined air-space or chamber, substantially for the purposes set forth.

Second, I claim making a portion of the casing removable, for the purpose of facilitating the removal and replacement of stills requiring repair, substantially as described.

Third, I claim combining with the casing openings and dampers, or covers, for the admission and control of air circulation about the sides of the still, substantially as described.

1,948.—Martin Metcalf, of Grand Rapids, Mich., for an Improvement in Bee-Hives:

I claim, first, The employment of a revolving bee-hive, so arranged that artificial swarming may be produced substantially in the manner specified.

Second, I claim the employment of the movable frames, D D, provided with cylinder, m, when used in connection with a revolving bee-hive, in the manner and for the purpose set forth.

1,949.—Federal C. Adams and Joseph Peckover, of Cincinnati, Ohio for an Improvement in Cooking Stoves:

We claim, first, The hollow division flue plate, F, for introducing heated air into the oven in addition to its other duty of dividing the flue space, substantially as described.

Second, We also claim the combination of the hollow wood support, k, air heating chamber, h, and open fire back plate, J, for the purpose and in the manner substantially as represented and described.

1,950.—John Allender, of New London, Conn., for an Improvement in Wringing Machines:

I claim, in elastic or yielding rollers for squeezing water from clothes and other purposes, making the core smaller in the middle than at the ends, and the elastic or yielding covering thicker at and near the middle between the ends, than it is at or near the ends, substantially as described.

I also claim the grooves in the core in combination with the ribs on the inside of the rubber or yielding cover substantially as described, to prevent the covering from slipping on the core.

1,951.—Wm. D. Bartlett, of Amesbury, Mass., for an Improved Furnace for Heating Buildings:

I claim, first, The arrangement and combination of the cylinders, A C' E, with the cold air induction pipe, C, hot-air conveying pipes, D D, fire-pot, F, annular chamber, I, and pipe, L, substantially as and for the purpose set forth.

Second, Having the openings, b c, at the bottom of the cylinder, E, of varying size, and placed in relation with the lower orifice of pipe, L, as shown and described for the purpose of equalizing the draught, and consequently the heat around the fire-pot, F.

[This invention consists in a peculiar arrangement of fire-chamber or pot, air-heating chamber, hot-air chamber, cold-air chamber and smoke pipe, whereby a very simple and efficient furnace is obtained.]

1,952.—Benjamin S. Benson, of Baltimore, Md., for an Improvement in Pipe Molding Machine:

I claim the introduction of water, or other suitable fluid, through a tube or packer shaft to moisten the sand in the flask at the moment it is being packed, substantially in the manner and for the purpose described.

1,953.—A. Bigelow, of Hamilton, Canada West, for an Improvement in Rock Drills:

I claim, first, Having one or both of the cams, F, fitted in adjustable sockets, E, substantially as shown, to admit of the placing of one or both cams in an oblique position, for the purpose of rotating, as well as lifting the drill-rod, D, as set forth.

Second, Placing the cams, F, within an adjustable circular frame, C, through which the drill-rod, D, passes, said frame, C, being fitted between guides, B B, at the upper end of frame, A, and arranged substantially as shown to admit of the ready adjustment of the drill-rod, D, from a vertical position to any degree of inclination desired.

Third, In combination with the adjustable circular frame, C, cams, F, and drill-rod, D, the cord and weight, J K, applied substantially as and for the purpose specified.

[This invention relates to an improved rock drill of that class in which cams are employed for lifting the drill. The invention consists in having the cams so arranged as to be adjustable and capable of being placed in an inclined position so as to give the drill a rotary as well as up and down movement. The invention also consists in having the cams placed in a circular frame, through which the drill rod passes, all being so arranged as to admit of the drill working in vertical or in inclined positions, as circumstances may require.]

1,954.—J. F. and W. L. Black, of Lancaster, Ill., for an Improvement in Gang Plows:

I claim the toggle, L, with lever, N, attached, draught-pole, F, footboard, J, driver's seat, I, plow-beams, C C, and axle, A, combined and arranged to operate as and for the purpose set forth.

[This invention relates to an improved gang plow, which is designed to be drawn by a team. The object of the invention is to facilitate the turning of the implement, and at the same time obtain a device which which will perform its work in a thorough manner.]

1,955.—O. H. Bogardus, of Syracuse, N. Y., for an Improved Grade Delineator:

I claim the use of the pulleys, L and M, in their combination with the driving and recording portions of the instrument, to obtain a record of the horizontal movement, substantially as shown and described.

1,956.—H. F. Bond, of Waltham, Mass., for an Improved Machine for Sharpening Fence Pickets:

I claim the application of the adjustable slotted supports for the trough, J, by which pickets of various widths can be cut, and with various bevels.

1,957.—Reuben Chadwick, of Nantucket, Mass., for an Animal Trap:

I claim my improved trap, having its entering chamber, G, its series of baiting chambers, F, and its receiving chamber, O, constructed and arranged, with respect to each other, and so as to operate together as described.

1,958.—J. D. Cochran, of Milford, N. H., for an Improvement in Straw and Hay Cutters:

I claim, first, The combination and arrangement of projection, e, movable block, f, pawl, g, and ratchet wheel, h, operating in relation to each other for the purposes stated.

Second, The combination with the crosshead piece of the cutter frame of the removable frame, H, with its knife, G, and pins, constructed and operating as and for the purposes stated.

1,959.—Truman Crossett, of North San Juan, Cal., for an Improvement in Machines for Drilling Rocks:

I claim the swinging or adjustable frame, C, suspended between the uprights, B B, and having the hammer shaft, F, and bar, D, fitted in it, and arranged with the clamp, H, and drill, K, to operate as and for the purpose set forth.

I further claim the connecting of the hammer shaft, F, to the bar, D, by a pivot or pin, e', and securing the shaft, F, at any suitable angle with the bar, D, by means of the pin, g, and semi-circular bars, E E, as and for the purpose specified.

[The object of this invention is to obtain a simple and efficient rock drill that may be used in all cases where machine drills can be applied, and be capable of being operated manually or by other power.]

1,960.—Thomas Dare, of Osceola, Iowa, for an Improved Culinary Boiler:

I claim the inner vessel, C, fitted within the vessel or boiler, A, when the former is provided with springs, E E, arranged substantially as shown, to serve as an efficient fastening in securing C, within A, and to admit of being readily manipulated to enable C to be withdrawn from A, when desired.

[This invention consists in placing one vessel within another, the inner vessel being considerably smaller than the outer one, and secured within it by springs. The outer vessel contains water, through the medium of which the contents of the inner vessel is heated without the danger of being burned, while the springs are so arranged that the inner vessel may be readily withdrawn from the outer one when necessary, the springs, at the same time, preventing the inner vessel from being raised under the action of the steam or from other causes.]

1,961.—G. E. C. Delaire, of Paris, France, for an Improvement in Aniline Colors:

I claim the method described of converting the red of aniline into the blue and violet of aniline, by treating the former with pure aniline, in the manner substantially as set forth.

1,963.—Elliot Savage (assignor to Julius Pratt & Co.), of West Meriden, Conn., for a Machine for Gaging and Toothing Ivory for Pianoforte Keys:

I claim the toothing and gaging the ivory blanks by means of a series of revolving toothed irons placed in a revolving stock, so that the tooth points of each will be in the same planes, and, in combination therewith, of a carrier operating in such manner as to feed the ivory blanks to the planes automatically, substantially in the manner and for the purpose set forth.

1,964.—I. S. Schuyler (assignor to J. J. Eckel), of New York City, for an Improvement in Cotton Pickers:

I claim the combination of the two endless belts, B C, placed within a suitable case, A, and arranged for joint operation substantially as and for the purpose set forth.

[The object of this invention is to obtain a simple and portable device for manual operation, which may be employed for expediting picking or harvesting cotton. The invention consists in the use of two elastic endless belts placed within a suitable case, and arranged so as to effect the desired result.]

1,965.—Wellington Case, of Waterloo, Iowa, for an Improved Strainer for Coffee and Teapots:

I claim the revolving cylinder tea and coffee boiler supported by two upright supporters, with springs on each side, as seen in drawing.

1,966.—Sophia Carpenter, of Flushing, N. Y., administratrix of Wm. Carpenter, deceased, late of Metamora, Ill., for an Improved Automatic Fan and Fly Brush:

I claim, first, The arrangement of the rockshaft, B, in combination with the fan, A, connecting rod, c, and revolving wheel, F, constructed and operating in the manner and for the purpose shown and described.

Second, The arrangement of the adjustable link, g, and extension rod, e, in combination with the revolving fan, j, constructed and operating substantially as and for the purpose set forth.

[This invention consists in the arrangement of a rockshaft to which the fan is attached, in combination with an eccentric wrist pin on a rotating wheel, in such a manner that, by the action of the wheel on the rockshaft, an oscillating motion is imparted to the fan, and a current of air is created until the motion of the wheel stops. It further consists in the arrangement of a revolving fan attached to an arm which extends from the rotary wheel in a radial direction, in such a manner that, by the motion of the wheel and by the action of the air, an independent rotary motion is imparted to the fan, giving to the same the appearance of a bird, and rendering it very effective in chasing away flies, &c.]

RE-ISSUE.

111.—John Young, of West Galway, N. Y., for an Improvement in Washing Machines. Patented Sept. 19, 1848:

I claim, first, The combination of the rollers with the hinged platform, for the purpose of rubbing the cloth and squeezing the water therefrom, substantially as and for the purposes described and specified.

Second, The employment and use of elastic rollers which shall readily yield to any inequalities in the clothes passing through them, and thereby prevent injury, substantially as and for the purpose specified.

Third, The employment of the conical rollers for producing a rubbing as well as squeezing motion on the clothes passing between them, whereby the operation of washing is greatly accelerated, substantially as and for the purposes described and specified.

EXTENSION.

5,199.—R. M. Hoe, of New York City, for an Improvement in Rotary Printing Presses. Dated July 24, 1847:

I claim, first, Putting the form or forms of types on a movable or permanent segment of a cylinder which forms the bed and chase, substantially as described, and also when this is combined with the cylindrical distributing table which occupies another segment of the same cylinder, substantially as described.

Second, I claim giving to the inking rollers a movement toward and from the center of the cylinder that carries the form of types, substantially as described when this is combined with the form of types, and the distributing table made on one and the same cylinder and of different radius, as described, whereby the inking rollers are adapted to the different diameter of the form of types and the distributing table, as described.

Third, I claim giving to the ducter or fountain roller of the inking apparatus a slow, continuous rotary motion, in combination with the ratchet connection between the roller and the mechanism from which it receives its continuous rotary motion, substantially as described, whereby the ink is more regularly supplied, and by which, also, this supply may be altered when desired, as described.

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And, lastly, I claim the method of securing the form of types on a cylindrical surface with column rules, made thicker toward their outer than their inner edge, by connecting these with grooves in the bed, by which they are permitted to approach and recede from each other, and, at the same time, kept down to the same radius, substantially as described, whereby prismatic types can be secured and held on a cylindrical surface as effectually as on a flat surface, as described.

Notes and Queries

R. W. B., of N. Y.—A portable gasometer, with a movable piston to maintain the gas at the same pressure on the jets, as the gas is consumed, is used now on steamboats and in other places, and is not, therefore, patentable, but there may be some improvement (not described in your letter) in your apparatus that is patentable.

G. C. C., of N. Y.—The preparation of copper-plates for printing, without engraving, by first writing upon their surface with shell-lac, then depositing copper on the exposed metal, is quite old, and therefore not patentable. It is impossible to make finely figured copper-plates for printing by this mode, as lines cannot be executed with shell-lac solution equal in fineness to those cut with a graving tool.

J. W. S., of N. Y.—The purchaser of a county right in New York on a patent cannot sell machines out of the county in which he is owner, neither can the purchaser of a machine take it into another county to operate without making himself liable for infringement.

G. W., of Iowa.—It will not be easy for you to obtain a situation as engineer in the navy, unless upon some of the gun-boats now making ready at Cincinnati for operations on the Mississippi. We do not know where you can apply in the West for a situation upon one of them. Your great experience as an engineer on Western boats and rivers—never having had a boiler explode while in your charge—should be a high recommendation to you.

T. G. P., of Vt.—Under the new Patent law the specification, which forms part of the letters patent, is printed instead of copied on parchment, as formerly. The time required to set up and print as many specifications as are issued every week renders it necessary for the Patent Office to retain the letters patent three or four weeks after it is actually issued before mailing to the patentee. If your claims appeared in our issue of two weeks ago you will get your patent in about ten days from the time you receive this week's paper.

Col. F. D. G., of N. Y.—We think you could get your cannon rifled at Carpenter & Plass' establishment, in this city. We believe they do such work.

B. S., of N. Y.—You will find, on page 357, Vol. IV. (new series), of the Scientific American, that we have already recommended green leaves placed in the inside of soldiers' caps, as a protection from sunstroke.

L. P., of Ill.—We know of no objection to connecting lightning rods with a gas pipe. Illuminating gas is not explosive unless it is mixed with atmospheric air.

M., of Mass.—Burning 1 lb. of hydrogen in the air would exhaust 8 lbs. of oxygen just as much as burning the same number of equivalents of any other substance. There would be no deleterious gas produced, however; the inert nitrogen remaining the same in quantity as before.

E. S., of Ohio.—If it is true that the hand may be held on the bottom of a boiling kettle, we suppose that it must be owing to the bad conducting property of the soot, or perhaps incrustation on the inside of the kettle. Try it on a new kettle, heated over an anthracite fire, and see how it will feel.

H. N. C., of N. Y.—There is a difference of opinion in regard to the comparative merits of screws and sidewheels for steamers. One advantage of screws for ocean-going steamers is the greater ease to the vessel resulting from having no side appendages to strike the water as the vessel rolls in a heavy sea.

M. D., of N. Y.—There is no definite limit to the hight to which water may be forced by a hydraulic ram; the smaller the proportion of the stream raised, the greater the hight to which it could be elevated. Platinum is hard enough for machinery, and it will not corrode in water.

G. N. W., of Maine.—The principle of the rocket has been applied to cannon balls and shells in the manner you speak of, and by permitting the escape of the gases evolved by the combustion of the rocket composition through spiral passages, a rotary motion of the projectile has been obtained.

Subscriber, of N. Y.—Warming well water fits it for purposes of irrigation. Mixing guano or other manure with it also further improves it.

J. F., of Ohio.—We cannot tell you where you can obtain statistics of the steam power of the United States. Bourne's work on the steam engine is the best known to us. It is a London publication; we do not know its price.

S. F. D., of Maine.—Colt's first patent is now public property.

O. C. H., of Conn.—Litmus paper, for testing alkalies and acids, is made with a decoction of red cabbage or red dahlias.

B. H. D., of Ill.—You certainly can push a cogwheel up an inclined plane, so as to keep an endless chain in constant motion, if you have sufficient strength for the work—not otherwise.

G. E. G., of N. Y.—There is no manufactory of the sulphite of lime in this city, so far as we know.

A. J. B., of Ill.—The recipe which you have sent us of the white gunpowder is well known to us. The best length for a barrel for a rifle has not yet been positively ascertained. You will find in Chapman's book on the American rifle, an illustrated description of the best rifle for army purposes. A telescopic sight would not be suitable for rapid shooting.

C. S. T., of Conn.—Both are correct: aquarium is the singular, aquaria the plural.

Money Received
At the Scientific American Office on account of Patent

Office business, during one week preceding Wednesday, Aug. 7, 1861:—

H. Q. H., of N. Y., $22; R. P. P., of N. Y., $40; R. P., of N. Y., $20; A. R. D., of N. Y., $20; J. H. B., of N. J., $45; B. and K., of Ohio, $20; L. W. B., of Russia, $100; A. F., of N. Y., $45; B. and R., of Ohio, $20; S. M. S., of Iowa, $45; C. H., of N. H., $20; W. D. D., of Ill., $15; G. W. V. B., of Wis., $25; H. N. D., of Cal., $5; T. and R., of Mass., $25; G. K., of Pa., $50; H. and P., of Iowa, $15; C. L., of Ohio, $20; J. P., of N. Y., $35; J. N. A. G., of Mass., $25; H. and J., of Conn., $25; A. H., of Minn., $15; J. B. M., of N. J., $15; J. G. W., of N. Y., $100; C. B., of Pa., $25; T. S., of Cal., $40; A. McG., of N. Y., $15; O. W. K., of Wis., 25; T. L., of Cal., $15; E. C. G., of Cal., $20; S. W. H., Conn., $15; S. R., of N. Y., 15; J. H. S., of Pa,, $25; A. and C., of N. Y., $250; R. Q., of N. Y., $25; P. S., of Pa., $60; O. B., of Ohio, $45; R. G. H., of Mass, $15; D. R. P., of Wis., $250; R. W., of Iowa, $25; P. J. B., of N. S., $25; I. P. F of N. J., $55.

Specifications and drawings and models belonging to parties with the following initials have been forwarded to the Patent Office from July 31 to Wednesday, Aug. 7, 1861:—

J. H. B., of N. J.; P. S., of Pa.; R. W., of Iowa; G. K., of Pa.; L. C. W., of N. Y.; J. J., of N. Y.; J. H S., of Pa., P. J. B., of N. S.; J. A. de B., of N. Y.; A. H. B., of N. Y.; J. H. L., of N. Y.; A. A., of Ohio; J. H. S., of N. Y.; G. J. and H. W. R., of N. Y.; E. A. M., of N. Y.; W. L. G., of N. Y.; G. W. V. B., of Wis.; T. and R., of Mass.; H. N. D., of Cal.; J. McA. G., of Mass.; F. X. M., of N. Y.; C. B., of Pa.; H. and J., of Conn.; J. E. S., of N. Y.; O. W. K., of Wis.

INSTRUCTIONS ABOUT EUROPEAN PATENTS,
With a Synopsis of the Patent Laws of the Various Countries.

AMERICAN INVENTORS SHOULD BEAR IN MIND that, as a general rule, any invention which is valuable to the patentee in this ountry is worth equally as much in England and some other foreign countries. Four patents—American, English, French and Belgian—will secure an inventor exclusive monopoly to his discovery among 100,000,000 of the most intelligent people in the world. The facilities of business and steam communication are such that patents can be obtained abroad by our citizens almost as easily as at home. The majority of all patents taken out by Americans in foreign countries are obtained through the Scientific American Patent Agency. We have established agencies at all the principal European seats of government, and obtain patents in Great Britain, France, Belgium, Prussia, Austria, Spain, &c., with promptness and dispatch.

It is generally much better to apply for foreign patents simultaneously with the application here; or, if this cannot be conveniently done, as little time as possible should be lost after the patent is issued, as the laws in some foreign countries allow patents to any one who first makes the application, and in this way many inventors are deprived of valid patents for their own inventions.

Many valuable inventions are yearly introduced into Europe from the United State, by parties ever on the alert to pick up whatever they can lay their hands upon which may seem useful.

Models are not required in any European country, but the utmost care and experience is necessary in the preparation of each case.

GREAT BRITAIN.

Patents for inventions under the new law, as amended by the act of Oct. 1, 1852, and now in operation, include the United Kingdom of Great Britain and Ireland in one grant, which confers the exclusive right to make, use, exercise or vend. This is conceded to the inventor, or the introducer, for a period of fourteen years, subject, after the patent is granted, and the first expenses paid, to a government tax twice during its existence—once within three years, and once again within seven. The purchaser of a patent would assume the payment of these taxes.

There is no provision in the English law requiring that a patented invention shall be introduced into public use within any specified limit. Under the Patent Act of October, 1852, the British government relinquished its right to grant patents for any of its colonies, each colony being permitted to regulate its own patent system. If a patent has been previously taken out in a foreign country, the British patent will expire with it.

FRANCE.

Patents in France are granted for a term of fifteen years, unless the invention has been previously secured by patent in some other country; in such case, it must take date with and expire with the previous patent. After the patent is issued, the French government requires the payment of a small tax each year so long as the patent is kept alive, and two years' time is given to put the invention patented into practice.

It should be borne in mind that, although the French law does not require that the applicant should make oath to his papers, yet if a patent should be obtained by any other person than the inventor, upon proof being adduced to this effect before the proper tribunal, the patent would be declared illegal.

BELGIUM.

Patents in Belgium are granted for twenty years, or if previously patented in another country, they expire with the date thereof. The working of the invention must take place within one year from date of patent; but an extension for an additional year may be obtained on application to the proper authorities. Inventors are only legally entitled to take out patents.

THE NETHERLANDS.

Patents are granted by the Royal Institute of the Netherlands to natives or foreigners represented by a resident subject, which extend to a period of about two years, within which time the invention must be brought into use, and upon payment of an additional tax, a patent will be granted to complete its whole term of fifteen years. Unless these conditions are complied with, the patent ceases.

PRUSSIA.

Applications for patents in Prussia are examined by the Royal Polytechnic Commission, and unless there is novelty in the invention, the applicant's petition will be denied; and if it is granted, the invention must be worked within six months afterward. A respite, however, of six additional months may be obtained, if good and sufficient reasons for it can be shown.

AUSTRIA.

Austrian patents are granted for a term of fifteen years, upon the payment of 1,000 florins, or about $500 in American currency. This sum, however, is not all required to be paid in advance. It is usual to pay the tax for the first five years upon the deposit of the papers, and the patent must be worked within its first year. The Emperor can extend the patent and privilege of working by special grant. In order to obtain a patent in Austria, an authenticated copy of the original Letters Patent must be produced.

SPAIN.

The duration of a Spanish patent of importation is five years, and can be prolonged to ten years; and the invention is to be worked within one year and one day.

To obtain a Cuban patent requires a special application and an extra charge.

RUSSIA.

Since the close of the Crimean war, considerable attention has been given to Russian patents by Americans. Russia is a country rich in mineral and agricultural products, and there seems to be a field open for certain kinds of improvements. The present Emperor is very liberally disposed toward inventors, and as an evidence of the interest which he takes in the progress of mechanic arts, we may state that we have had visits from two distinguished Russian *savans*, specially sent out by the Emperor to examine Amdrican inventions. As Russian patents are expensive, and somewhat difficult to obtain, we do not take it upon ourselves to advise applications; inventors must judge for themselves; and this remark applies not only to Russia, but also to all other foreign countries.

CANADA.

Patents of invention are granted only to actual residents of Canada and British subjects. Under the general Patent Law of Canada, an American cannot procure a patent for his invention there. The only way in which he can do so is by virtue of a special act of Parliament, which is very difficult, uncertain, and expensive to obtain. Several zealous friends of reform in Canada are working earnestly to bring about a reciprocal law, but their efforts have thus far proved fruitless.

BRITISH INDIA.

The date of the law, Feb. 28, 856; duration of a patent, fourteen years. Invention must be worked within two years from date of petition. Privilege granted only to the original inventor or his authorized agent in India.

SAXONY.

Duration of patent, from five to ten years. Invention must be worked within one year from date of grant. Careful examination made before granting a patent.

HANOVER.

Duration of patent, ten years; and in case of foreign patent having been previously obtained, an authenticated copy of said patent must be produced. Invention must be worked within six months from date of grant.

SARDINIA.

Duration of patent, from one to fifteen years. Patents for five years or less must be worked within one year, and all others within two years.

NORWAY AND SWEDEN.

Duration of patent, three years, at least; fifteen at most, according to the nature and importance of the invention. Patents for foreign inventions not to exceed the term granted abroad, and to be worked within one, two or four years.

AUSTRALIA.

Date of law, March 31, 1854. Careful examination made by competent persons previous to issue of patent, which, when granted, extends to fourteen years. Imported inventions are valid according to duration of foreign patent. It would require from twelve to eighteen months to procure a patent from the Australian government.

Parties holding foreign patents secured through our agency will be notified from time to time of the condition of their cases.

GENERAL REMARKS.

While it is true of most of the European countries herein specified, that the system of examination is not so rigid as that practised in this country, yet it is vastly important that inventors should have their papers prepared only by the most competent solicitors, in order that they may stand the test of a searching legal examination; as it is a common practice when a patentee finds a purchaser for his invention for the latter to cause such examination to be made before he will accept the title.

It is also very unsafe to entrust a useful invention to any other than a solicitor of known integrity and ability. Inventors should beware of speculators, whether in the guise of patent agents or patent brokers, as they cannot ordinarily be trusted with valuable inventions.

Messrs. MUNN & CO. have been established *fifteen years* as American and Foreign Patent Attorneys and publishers of the Scientific American, and during this time they have been entrusted with some of the most important inventions of the age; and it is a matter of pardonable pride in them to state that not a single case can be adduced in which they have ever betrayed the important trust committed to their care. Their agents in London, Paris, and other Continental cities, are among the oldest and most reliable Patent Solicitors in Europe, and they will have no connection with any other.

Caution.—It has become a somewhat common practice for agents located in England to send out circulars soliciting the patronage of American inventors. We caution the latter against heeding such applications, or they may otherwise fall into the hands of irresponsible parties, and thus be defrauded of their rights. It is much safer for inventors to entrust their cases to the care of a competent, reliable agent at home.

Fees.—The fees required by us for the preparation of foreign applications are not the same in every case; as, in some instances, when the inventions are of a complicated character, we are obliged to charge a higher fee. Applicants can always depend, however, upon our best terms, and can learn all particulars upon application, either in person or by letter.

Parties desiring to procure patents in Europe can correspond with the undersigned, and obtain all the necessary advice and information respecting the expenses of obtaining foreign patents.

All letters should be addressed o Messrs. MUNN & CO., No. 37 Park-row, New York.

CHANGE IN THE PATENT LAWS.

NEW ARRANGEMENTS—PATENTS GRANTED FOR SEVENTEEN YEARS.

The new Patent Laws, recently enacted by Congress, are now in full force, and promise to be of great benefit to all parties who are concerned in new inventions.

The duration of patents granted under the new act is prolonged to SEVENTEEN years, and the government fee required on filing an application for a patent is reduced from **$30** down to **$15**. Other changes the fees are also made as follows:—

On filing each Caveat	$10
On filing each application for a Patent, except for a design	$15
On issuing each original Patent	$20
On appeal to Commissioner of Patents	$20
On application for Re-issue	$30
On application for Extension of Patent	$50
On granting the Extension	$50
On filing Disclaimer	$10
On filing application for Design, three and a half years	$10
On filing application for Design, seven years	$15
On filing application for Design, fourteen years	$30

The law abolishes discrimination in fees required of foreigners, except in reference to such countries as discriminate against citizens of the United States—thus allowing English, French, Belgian, Austrian, Russian, Spanish, and all other foreigners except the Canadians, to enjoy all the privileges of our patent system (except in cases of designs) on the above terms.

During the last sixteen years, the business of procuring Patents for new inventions in the United States and all foreign countries has been conducted by Messrs. MUNN & CO., in connection with the publication of the SCIENTIFIC AMERICAN; and as an evidence of the confidence reposed in our Agency by the Inventors throughout the country, we would state that we have acted as agents for more than **FIFTEEN THOUSAND** Inventors! In fact, the publishers of this paper have become identified with the whole brotherhood of Inventors

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and Patentees, at home and abroad. Thousands of Inventors for whom we have taken out Patents have addressed to us most flattering estimonials for the services we have rendered them, and the wealth which has inured to the Inventors whose Patents were secured through this Office, and afterward illustrated in the SCIENTIFIC AMERICAN, would amount to many millions of dollars! We would state that we never had a more efficient corps of Draughtsmen and Specification Writers than are employed at present in our extensive Offices, and we are prepared to attend to Patent business of all kinds in the quickest time and on the most liberal terms.

Testimonials.

The annexed letters, from the last three Commissioner of Patents, we commend to the perusal of all persons interested in obtaining Patents:—

Messrs. MUNN & Co.:—I take pleasure in stating that, while I held the office of Commissioner of Patents, MORE THAN ONE-FOURTH OF ALL THE BUSINESS OF THE OFFICE CAME THROUGH YOUR HANDS. I have no doubt that the public confidence thus indicated has been fully deserved, as I have always observed, in all your intercourse with the Office, a marked degree of promptness, skill and fidelity to the interests of your employers. Yours, very truly,

CHAS. MASON.

Immediately after the appointment of Mr. Holt to the office of Postmaster-General of the United States, he addressed to us the subjoined very gratifying testimonial:—

Messrs. MUNN & Co.:—It affords me much pleasure to bear testimony to the able and efficient manner in which you have discharged your duties of Solicitors of Patents while I had the honor of holding the office of Commissioner. Your business was very large, and you sustained (and, I doubt not, justly deserved) the reputation of energy, marked ability and uncompromising fidelity in performing your professional engagements. Very respectfully,

Your obedient servant, J. HOLT.

MESSRS. MUNN & Co.:—Gentleman: It gives me much pleasure to say that, during the time of my holding the office of Commissioner of Patents, a very large proportion of the business of inventors before the Patent Office was transacted through your agency, and that I have ever found you faithful and devoted to the interests of your clients, as well as eminently qualified to perform the duties of Patent Attorneys with skill and accuracy. Very respectfully,

Your obedient servant, WM. D. BISHOP.

The Examination of Inventions.

Persons having conceived an idea which they think may be patentable, are advised to make a sketch or model of their invention, and submit it to us, with a full description, for advice. The points of novelty are carefully examined, and a reply written corresponding with the facts, free of charge. Address MUNN & CO., No. 37 Park-row, New York.

Preliminary Examinations at the Patent Office.

The advice we render gratuitously upon examining an invention does not extend to a search at the Patent Office, to see if a like invention has been presented there, but is an opinion based upon what knowledge we may acquire of a similar invention from the records in our Home Office. But for a fee of $5, accompanied with a model or drawing and description, we have a special search made at the United States Patent Office, and a report setting forth the prospects of obtaining a Patent, &c., made up and mailed to the Inventor, with a pamphlet, giving instructions for further proceedings. These preliminary examinations are made through our Branch Office, corner of F and Seventh-streets, Washington, by experienced and competent persons. Over 1,500 of these examinations were made last year through this Office, and as a measure of prudence and economy, we usually advise Inventors to have a preliminary examination made. Address MUNN & CO., No. 37 Park-row, New York.

Caveats.

Persons desiring to file a Caveat can have the papers prepared in the shortest time by sending a sketch and description of the invention. The government fee for a Caveat, under the new law, is $10. A pamphlet of advice regarding applications for Patents and Caveats furnished gratis on application by mail. Address MUNN & CO., No. 37 Park-row New York.

Rejected Applications.

We are prepared to undertake the investigation and prosecution of rejected cases, on reasonable terms. The close proximity of our Washington Agency to the Patent Office affords us rare opportunities for the examination and comparison of references, models, drawings, documents, &c. Our success in the prosecution of rejected cases has been very great. The principal portion of our charge is generally left dependent upon the final result.

All persons having rejected cases which they desire to have prosecuted are invited to correspond with us on the subject, giving a brief history of their case, inclosing the official letters, &c.

Extension of Patents.

Valuable Patents are annually expiring which might be extended and bring fortunes to the households of many a poor Inventor or his family. We have had much experience in procuring the extension of Patents; and, as an evidence of our success in this department, we would state that, in all our immense practice, we have lost but *two* cases, and these were unsuccessful from causes entirely beyond our control.

It is important that extension cases should be managed by attorneys of the utmost skill to insure success. All documents connected with extensions require to be carefully drawn up, as any discrepancy or untruth exhibited in the papers is very liable to defeat the application.

Of all business connected with Patents, it is most important that extensions should be intrusted only to those who have had long experience, and understand the kind of evidence to be furnished the Patent Office, and the manner of presenting it. The heirs of a deceased Patentee may apply for an extension. Parties should arrange for an application for an extension at least six months before the expiration of the Patent.

For further information as to terms and mode of procedure in obtaining an extension, address MUNN & CO., No. 37 Park-row, New York.

Assignments of Patents.

The assignment of Patents, and agreements between Patentees and manufacturers, carefully prepared and placed upon the records at the Patent Office. Address MUNN & CO., at the Scientific American Patent Agency, No. 37 Park-row, New York.

It would require many columns to detail all the ways in which the Inventor or Patentee may be served at our offices. We cordially invite all who have anything to do with Patent property or inventions to call at our extensive offices, No. 37 Park-row, New York, where any questions regarding the rights of Patentees, will be cheerfully answered.

Communications and remittances by mail, and models by express prepaid), should be addressed to MUNN & CO., No. 37 Park-row, New York.

RATES OF ADVERTISING.

Thirty Cents per line for each and every insertion, payable in advance. To enable all to understand how to calculate the amount they must send when they wish advertisements published, we will explain that ten words average one line. Engravings will not be admitted into our advertising columns; and, as heretofore, the publishers reserve to themselves the right to reject any advertisement sent for publication.

THE GRAEFENBERG MANUAL OF HEALTH.

This valuable family medical work, containing 300 pages, has been revised and improved, and elegantly illustrated with beautifully colored Engravings of the human system. Sent by mail to any part of the country on receipt of 25 cents. It is a complete guide to all diseases, and their cure.

Address letters to JOSHUA F. BRIDGE, M. D.,
Secretary Graefenberg Co., No. 2 Bond St., New York.

One of the leading New York Journal says:—"The popularity of this admirable and compendious work is well shown by this being the twenty-fourth edition of the Manual It contains a number of colored anatomical plates, and is a complete family physician, the best and most compendious that we have ever seen. Dr. Buchan's famous work is not to be compared in value to this excellent adviser. It is at once simple, popular, plain and explicit; and the mother, with such an adviser, is predared at once to apply the proper remedies in case of sudden attack of sickness in the family. In the country a copy of the Manual of Health is indispensable, and every family should possess one. It will save a hundred times its cost in doctors' bills, and, what is far better, will be the means of preserving many valuable lives to their families and relatives."

LIVE WITHOUT THE DOCTOR.

SAVE MONEY AND GAIN HEALTH.—The expense and trouble consequent upon the necessity of employing a physician, is no small item in the yearly calculations of the head of a family.

The most of this, and in fact all, except when serious accidents require surgical operations, or where very violent vital diseases render an occasional call necessary, can be avoided by having the Graefenberg Manual of Health and an assortment of Graefenberg Medicines.

FAMILIES can save large sums in doctors' bills, and avoid much suffering, by using the Graefenberg Medicines and Manual of Health.—*New York Tribune.*

THE Graefenberg Manual of Health, together with their valuable series of Family Medicines, will enable a family to dispense in nine cases out of ten, with the cost of a physician.—*Observer.*

NEARLY fifteen years experience has gained for the Graefenberg Company's Institution the confidence and esteem of the American people, and the combination of professional treatment under the direct supervision of the Medical Board, with the preparation and sale of family medicines under authority of an act of the Legislature of New York, has formed a union of professional practice and commercial enterprise never before witnessed. At the present day the position of the Graefenberg Company's Medical Institute is unparalleled by that of any Public Charity or Medical college in the world.

THE Graefenberg Company wish it to be distinctly understood that their theory and practice is not based upon infallibility. What is claimed, and what is borne out by facts, is that the medicines are the result of the highest medical skill adapted to the compounding of simple and entirely vegetable medicinal preparations. The treatment is the most judicious application of these simple vegetable productions in aid of the great and equally simple laws of nature governing the human system in health and disease. In ninety-nine cases out of a hundred the Graefenberg treatment will certainly cure.

CONSULATE OF THE U. S. OF AMERICA, BOMBAY, Sept., 1860.

This is to certify that I am personally acquainted with J. F. Bridge, M. D., of the city of New York, and that he is a learned and skillful physician of high standing; and further, that I have used the Graefenberg Medicines according to directions given in the Graefenberg Manual of Health, for several years, to my entire satisfaction; and I can confidently recommend them to all who wish to save doctors' bills and enjoy good health.

L. H. HATFIELD,
American Consul, Bombay.

THE Graefenberg Institute combines the sale of medicine, medical advice, and the reception of patients for treatment in the Institute Buildings, No. 2 Bond Street, N. Y. Many of the leading public men in the country have spoken in the highest terms of the Graefenberg Institution and its theory and practice. Others who are unacquainted with the medicines, but who are aware of the integrity and truthfulness of the Resident Physician, have permitted him to refer to them for the truth of what he may say. Among these last we have noticed the names of Horace Greeley, of the *Tribune;* Prof. M. P. Jewett, of the Vassar Female College, Poughkeepsie; the Rev. E. H. Chapin, D.D., of New York; Prof. A. P. Peabody, of Harvard University, &c.

WE, the undersigned citizens of the town of Persia, Cattaraugus County, N. Y., and the town of Collins, Erie County, N. Y., most cheerfully certify that we and our families have used the Graefenberg Family Medicines, and especially the Graefenberg Vegetable Pills, with the most gratifying results. We believe they justly merit the good qualities claimed for them by the Graefenberg Company, and would confidently recommend them to the public.

Signed by Geo. S. Hicker; Thomas J. Parker, physician; Abraham Sucker, farmer; I. P. Rollen, farmer; John Havens, merchant; Ely Page, farmer; Stephen Hooker, farmer; E. J. Goss, drover; G. F. Southwick, farmer; P. Walden, farmer; Wm. Griffiths, butcher; D. Grannis, wheelwright; Edwin P. Daily, builder; H. N. Hooker, merchant, John Barnheart, farmer; E. Van Dorke, cordwainer.

Sworn to before John B. Wilbor, Justice of Peace.

CERTIFICATE FROM THE GOVERNOR OF VIRGINIA.

I, William Smith, Governor of Virginia, certify and make known that Joseph Prentice—who signs a certificate relating to the Graefenberg Vegetable Pills—is the Clerk of the Court of this State. The said certificate embraces the names of the most reliable and responsible people in this community, and certifies to the invariable curative action of the Graefenberg Vegetable Pills, in the following diseases:—

Bilious Complaints, Asthma, Constipation, Dyspepsia, Erysipelas; Low, Nervous and Simple Fevers; Gastric Fevers, Gripes, Heartburn, Headache, Indigestion, Hysterics, Liver Complaint, Nervous Disorders, Neuralgia, Rheumatism, and all diseases arising from want of action in the digestive organs.

And I further testify that full credit and faith are due and ought to be given to said certificates.

In testimony whereof, I have subscribed my name, and caused the Great Seal of the State to be affixed hereunto.

Done at the city of Richmond, the twenty-second day of November, in the year of our Lord one thousand eight hundred and forty-eight, and of the Commonwealth the seventy-third.

WILLIAM SMITH, Governor.

By the Governor, Wm. H. Richardson, Sec. Com. and Keeper of the Seal.

☞ Four boxes of Graefenberg Pills will be sent to any part of the country, without expense, on the receipt of one dollar.

☞ On the receipt of $5, or upward, that amount of Graefenberg Medicine, at retail prices, will be sent to any place in the United States where there is an express line from New York, or from the General Agency, free of charge.

☞ Any of the Graefenberg Medicines, or information regarding the Institute, its terms, &c., may be had by addressing

JOSHUA F. BRIDGE, M. D.,
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AMESSIEURS LES INVENTEURS—AVIS IMPORtant. Les Inventeurs non familiers avec la langue Anglaise et qui préféreraient nous communiquer leurs inventions en Français, peuvent nous addresser dans leur langue natale. Envoyez nous un dessin et une description concise pour notre examen. Toutes communications seront reçues en confidence. MUNN & CO.,

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The following lectures have appeared in late numbers of the *Household Journal*, copies of which can be had, price four cents each, from any news agent, or from the publishers direct, on receipt of postage stamps:—

"The Beauties of Poetry." By Emerson Bennett, Esq. In No. 19.
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"The Wonders of God in Nature." By. Prof. I. P. Cook, Jr. In No. 3
"Self Help." By Timothy Titcomb, (Dr. J. G. Holland). In No. 2.
"The World's Highway,"—with Map of the World. By Dr. Solger. In No. 1.

A lecture is published every number, weekly. Annual subscriptions, $2,00 Weekly Nos., four cents. Monthly parts, 17 cents. Publishers, A. HARTHILL & CO., No. 20 North William Street, New York.

5 4

FLAX COTTON—PREMIUMS.

The Rhode Island Society for the Encouragement of Domestic Industry offer the following:

A premium of thirty dollars for a bale of not less than fifty pounds of the best prepared Flax Cotton, fit for use on cotton machinery, accompanied with a statement of its culture, production and preparation, including cost of the various processes.

A premium of twenty dollars for the second best bale of the same, on the same conditions.

The bales to be delivered at the rooms of the Society on or before Sept. 11, 1861. The premiums will be awarded by the Standing Committee at their meeting to be held on the third Wednesday in September, and paid as soon as awarded.

The Society will defray all the necessary expenses of transportation on the bales of proper size offered for premiums, and will claim the right to retain the same at their pleasure, on payment of a fair price.

The flax cotton will be open for public examination at the Exhibition of Vegetables, Fruits and Flowers, to be held by the Society at Railroad Hall, September 11, 1861. W. R. STAPLES, Sec'y.

Communications upon this subject may be addressed to the Secretary of the Society, or to either of the following persons as the Special Committee of the Society upon Flax Culture, &c.

James Y. Smith, Providence.
William Viall, "
His Excellency, William Sprague, Providence.
Bailey W. Evans, "
Robert S. Burrough, "
Edward Harris, Woonsocket, "
Elisha Dyer, Providence, Chairman.
Lyman B. Frieze, " Secretary. 4tf

IRON PLANERS, ENGINE LATHES, AND OTHER MAchinists Tools, of superior quality, on hand and finishing, and for sale low; also, Harrison's Grain Mills. For descriptive circular, address NEW HAVEN MANUFACTURING CO., New Haven, Conn.

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WOODWORTH PLANERS—IRON FRAMES TO PLANE 18 to 24 inches wide, at $90 to $110. For sale by S. C. HILLS, No. 12 Platt-street, New York. 2 1em

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MACHINERY.—S. C. HILLS, No. 12 PLATT-STREET, New York, dealer in Steam Engines, Boilers, Planers, Lathes, Chucks, Drills, Pumps; Mortising, Tenoning and Sash Machines; Woodworth's and Daniels' Planers; Dick's Punches, Presses and Shears; Cob and Corn Mills; Harrison's Grist Mills; Johnson's Shingle Mills; Belting, Oil, &c. 3*etw

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SWISS DRAWING INSTRUMENTS.—CATALOGUE (7TH edition), containing over 250 illustrations of Mathematical, Optical and Philosophical Instruments, with attachment of a large sheet representing the genuine Swiss Instruments, in their actual size and shape, will be delivered on application to all parts of the United States (gratis), by C. T. AMSLER, No. 635 Chestnut-street, Philadelphia, Pa., established agency for the Swiss Drawing Instruments since 1848.

Being about to retire from business, I have sold my stock of Swiss Mathematical Instruments to Messrs. McALLISTER & BROTHER, of No. 728 Chestnut street, Philadelphia, who will continue to keep such for sale, and to whom I refer my former friends and customers.

C. T. AMSLER.
Philadelphia, Pa., June 12, 1861. 1 tf

Zur Beachtung für deutsche Erfinder.

Die Unterzeichneten haben eine Anleitung, die Erfindern das Verhalten angibt, um sich ihre Patente zu sichern, herausgegeben, und verabfolgen solche gratis an dieselben.

Erfinder, welche nicht mit der englischen Sprache bekannt sind, können ihre Mittheilungen in der deutschen Sprache machen. Skizzen von Erfindungen mit kurzen, deutlich geschriebenen Beschreibungen beliebe man zu addressiren an

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37 Park Row, New-York.

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Daselbst ist zu haben:

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nebst den Regeln und der Geschäftsordnung der Patent-Office und Anleitungen für den Erfinder, um sich Patente zu sichern, in den Ver. St. sowohl als in Europa. Ferner Auszuge aus den Patent-Gesetzen fremder Länder und darauf bezügliche Rathschläge; ebenfalls nützliche Winke für Erfinder und solche, welche patentiren wollen.

Preis 20 Cts., per Post 25 Cts.

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The Great Exhibition Building.

The London *Building News* thus describes the progress of the building at South Kensington for the International Exhibition of 1862 :—

It is scarcely more than two months since the vast plot was an undisturbed green field, with buildings of unusual extent and magnificence around it. It was, however, made over to Messrs. Kelk and Lucas, and they are not men to let the grass grow under their feet; the sheep were removed, and the turf-cutters turned in there. They soon stripped the green spring carpet from it, and on the 9th of March the first stake was driven for the guidance of the workmen. From this stake the whole site was divided into squares, the positions of the piers were fixed, and pegs driven to guide the excavators. At the first glance this may appear a very simple operation, but a minute's reflection convinces us of its vast importance, and how much every subsequent operation depends upon its accuracy. A divergence of an inch or two in the length of a brick or stone building is of no particular moment, but in this case, where the several particles of the building are of various materials, and made in different parts of England, all to be finally fitted together here, it becomes of vital importance. The points must be determined and shown visibly with mathematical justness, so that all the details can be united, like the parts of a watch or a steam-engine.

More than half of the piers—those at the eastern end of the site—are already built, and the ground is staked out for the remainder. The walls are up to the hight of 20 or 30 feet at the south-eastern corner. The window frames, some 12 or 13 feet wide, and proportionally high, are in many places fixed. The arches are being turned over the inner openings, and thus the basement of the extensive galleries which are to contain the choicest specimens of pictorial art which have been produced within the last 100 years approaches completion. There seems no lack of men and no want of energy.

But the work yet done dees not give one-half such an idea of the undertaking as the preparations which arrest our attention at every step we take. Some half-dozen sheds are thrown up in different parts of the ground. Forges are glowing at a white heat, and our ears catch a roar from the stimulating bellows, mingled with the deadened sounds of the hammered metal. Close by it is a steam engine, for hoisting materials and other purposes. Tramways are laid down for facility of transport. Bricks are stacked in thousands and hundreds of thousands, and gravel dug out and sifted as though a new town were about to be built; timber in such quantities lies about as if a forest had been felled.

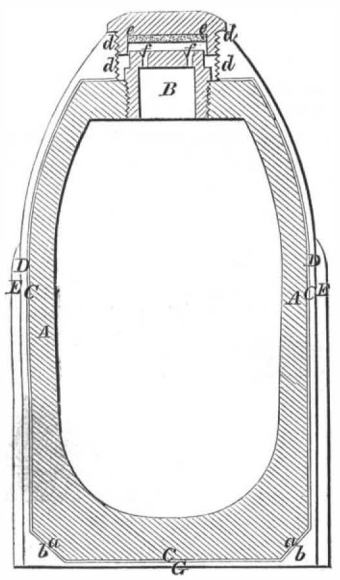
Three of the trees standing on the ground are preserved, fenced temporarily round for protection, and will, like those in the 1851 building, cast off their sere and withered leaves next autumn within the building. Every one, from Captain Fowke downward, seems in earnest, the sure earnest that there will be no disappointment next year, as far as the building is concerned.

SAWYER'S PROJECTILE.

We have published two descriptions of this famous shell, by two of the inventor's rivals, and now we publish his own with a full illustration. It will be seen that the description already given was correct as far as it went.

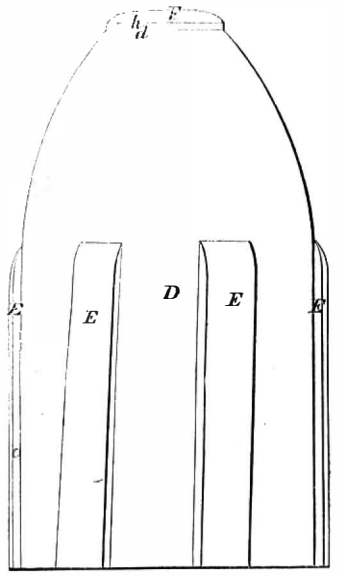
This shell was patented in 1855, by Sylvanus Sawyer, who has since conveyed one undivided half to Addison M. Sawyer. The Messrs. Sawyer are now the sole owners of the patent.

The patent was taken out before the Armstrong gun or the French rifled cannon were known.



The following is a brief synopsis of the Sawyer shell :—It is fired from a rifled, muzzle or breech-loading cannon. The shell is of iron, coated with a peculiar alloy, D D, soft enough to prevent any abrasion of the metal of the gun ; and at the same time is so compounded as to prevent any *leading* of the gun. In size, it is so constructed as to slide readily into its place in the gun while the base of the shell, G, being a plane with a beveled edge, *b*, when acted upon by the powder, has so much of the composition upon the bevel upset as is necessary to prevent windage. Thus the whole force of the powder is applied to the propulsion of the shell and all abrasion of the gun, which is observed in the discharge of ordinary projectiles, is avoided, and the use of a patch is entirely dispensed with.

The shell, which is elongated and conical at the head, invariably moves point foremost. This result



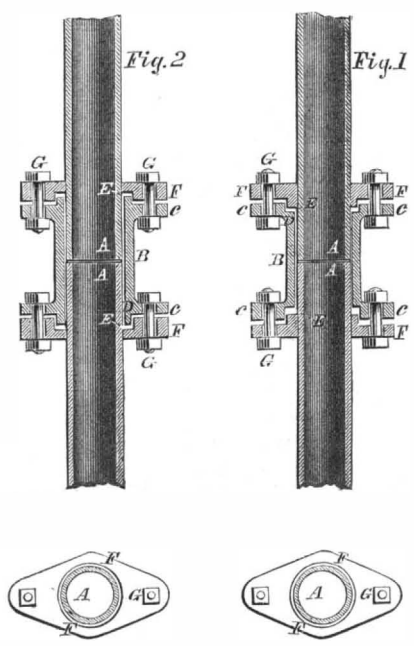
was considered impossible to be attained, until de monstrated by experimental practice with this shell. Upon the point or head, F, is a cap or screw-top, *h h*, filled with fulminate or percussion powder, *e e*, which explodes on concussion—by impact with any resisting substance—the alloy, *d d*, forming the point of the shell yields by the blow upon any hard substance, and communicating the fire to the powder within, thus forms the quickest and most certain mode of exploding a shell that has ever been devised.

This shell can be used with the ordinary time fuse ; and as a case shot, from its greater capacity, is far superior to any other shell.

NORMANDY'S MODE OF CONNECTING GAS PIPES.

This simple mode of connecting gas pipes was patented in England July 21st, 1869, by Alphonse Rene le Mire Normandy.

The pipes, A A (see cut), are made plain from end to end, that is to say, without sockets, and when two



such pipes are laid end to end, a short cylinder, B, is slipped over the ends where they meet. This short cylinder is made at its two ends with sockets or recesses, of larger diameter than other parts of the cylinder ; and it also has flanges, C C, at its ends. Into the sockets or recesses rings, D D, of vulcanized india rubber or other suitable packing are introduced, and over these filling pieces, F F, or rings of metal, are placed, which enter the sockets or recesses. These filling pieces are furnished with flanges, by means of which the said pieces are forced down upon the packing ; screw bolts, G G, being employed to draw the flanges on the filling pieces up to the flanges on the cylinder.

The blackberry crop is of so much importance on the Ohio river that the mail boats recently changed their time of starting from Louisville to an hour earlier to accommodate the shippers of blackberries along the line of the river from Madison to Cincinnati.

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MUNN & CO., Publishers,
No. 37 Park-row, New York.

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